Preliminary Instructions

for

ARC TYPE R-34A RECEIVER

Aircraft Radio Corporation

Boonton, New Jersey

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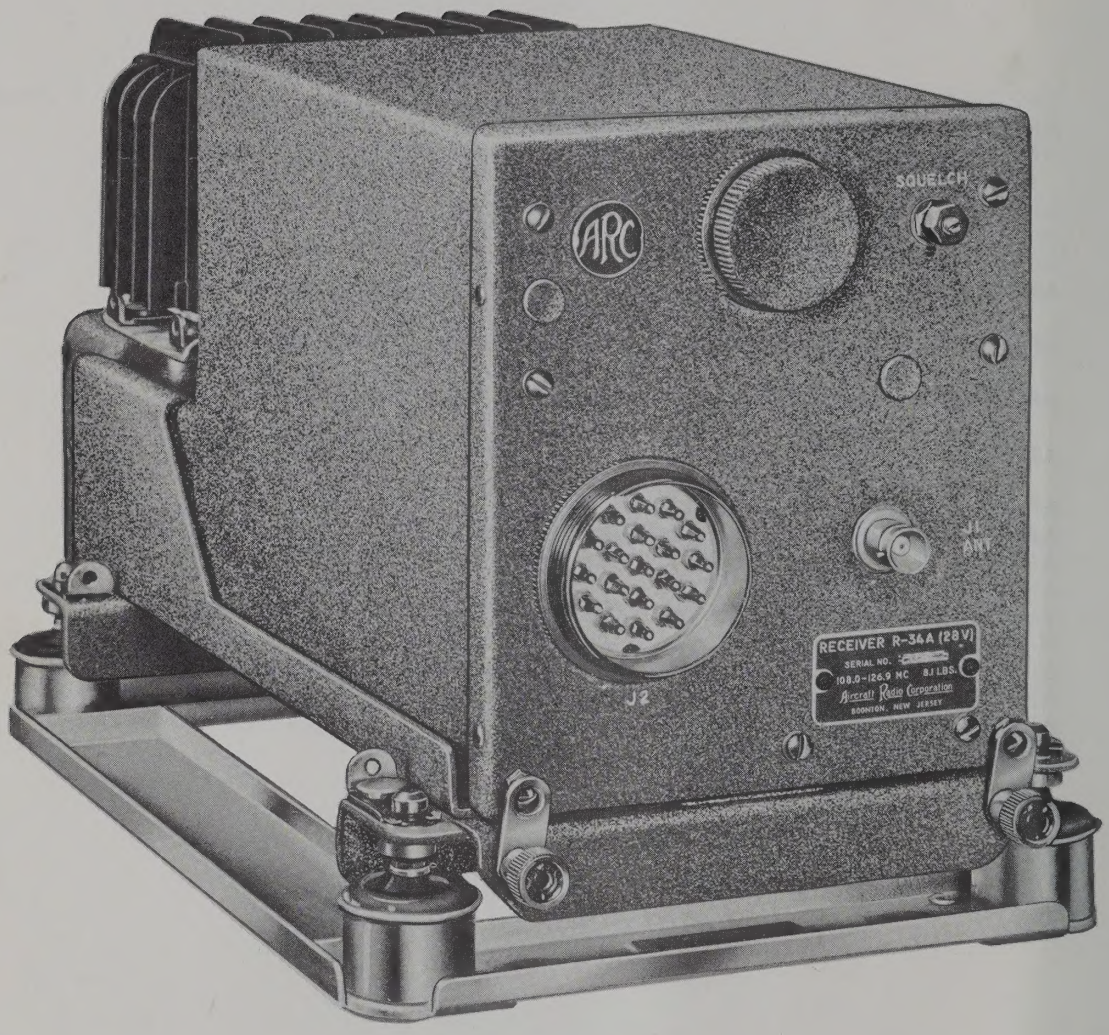

Figure 1-1. ARC Type R-34A Receiver

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SECTION I

GENERAL INFORMATION

1-1. INTRODUCTION.

This instruction book contains preliminary installation, operation, maintenance, and replaceable parts information for the ARC Type R-34A Receiver.

1-2. PURPOSE.

The ARC Type R-34A Receiver (Figure 1-1) is an airborne navigation-communication receiver which operates in the frequency range of 108.00 to 126.90 megacycles. A total of 190 channels spaced 100 kilocycles apart is available. The receiver is remotely operated by an ARC Type C-81A Control Unit, or similar control unit.

The R-34A may be used as a vhf communications receiver, or as part of the ARC Type 15F VHF Navigation Receiving Equipment for VOR and localizer reception. When installed with a suitable control unit, such as the C-81A, the R-34A may replace either the ARC Type R-13B Receiver, used in the ARC Type 15C and 15D Equipments, or the ARC Type R-32 Receiver, used in the ARC Type 15E Equipment.

1-3. SPECIFICATIONS.

Frequency Range:	108.00 to 126.90 mc
Number of Channels:	190
Channel Spacing:	100 kc (0.1 mc)
Channeling Time:	4 seconds, maximum
Input Power Requirements:	For 14-volt model, with ARC Type DV-11A Dynaverter®, 3.6 amperes at 13.75 volts dc For 28-volt model, with ARC Type DV-10A Dynaverter®, 1.8 amperes at 27.5 volts dc
High-voltage Drain:	85 ma at 260 volts dc
Circuit:	14-tube superheterodyne, double-conversion, crystal-controlled
Input Impedance:	50 ohms, nominal
Sensitivity:	6 db S+N/N with 3 "hard"[1] microvolts, or less, at 1000 cps, 30% modulation
Bandwidth:	6 db down ±22 kc minimum from center frequency 60 db down ±74 kc maximum from center frequency
Tuning:	Electrically-actuated, crystal-controlled. Nineteen crystals on megacycle drum; fundamental frequency range: 48.15 to 57.15 mc in 0.5-mc steps. Ten crystals on fractional megacycle drum; frequency range: 10.00 to 10.90 mc in 0.1-mc steps
Intermediate Frequencies:	First i-f, variable, 11.70-12.60 mc Second i-f, fixed, 1.7 mc
I-f Rejection:	At least 100 db

[1] "Hard" microvolts are defined as equivalent open-circuit microvolts across a 50-ohm source.

Image Rejection:	At least 70 db
Spurious Response Rejection:	At least 80 db
Agc:	Output constant within 4.5 db from 10 to 200,000 μv; agc knee no higher than 5 μv
Audio Output:	At least 300 mw into 300 ohms, with 1000 cps, 30% modulation, 108.00 to 117.90 mc At least 70 mw into 300 ohms, with 1000 cps, 30% modulation, 118.00 to 126.90 mc At least 300 mw into 300 ohms, with 1000 cps, 85% modulation, 118.00 to 126.90 mc
Squelch Sensitivity:	Adjustable from 0.1 to 5 μv (extendable to 15 μv by adjustment of i-f sensitivity control, which also affects agc knee)
Total Harmonic Distortion:	Less than 25% with 100 μv, 350 to 2500 cps modulation
Audio Frequency Response:	Within 6 db of rated output from 350 cps to 2500 cps
Tube Complement:	5718 Cascode r-f amplifier 5718 Cascode r-f amplifier 6021 Oscillator, doubler 5899 First mixer 5718 Second oscillator 5899 Second mixer 5899 First 1.7-mc i-f amplifier 5899 Second 1.7-mc i-f amplifier 5899 Third 1.7-mc i-f amplifier 5840 Fourth 1.7-mc i-f amplifier 5896 Detector, agc 6112 Squelch control, noise limiter 6021 First a-f amplifier, squelch, cathode follower 5902 A-f power amplifier
Mounting Required:	ARC Type E-15 or E-18 Rack on ARC Type M-25 Mounting for individual installation; ARC Type E-14 or E-17 Rack on ARC Type M-10 Mounting for combined mounting with ARC Type B-13, B-13A, or B-13A-1 Converter
Weight:	6.7 pounds, less mounting and rack 8.8 pounds, including E-15 or E-18 and M-25
Dimensions:	6-7/8 in. wide by 7-1/8 in. high by 13-3/16 in. lg, including rack and mounting

1-4. AUXILIARY EQUIPMENT.

Interconnecting cable assemblies are not supplied but are fabricated from individual wires, coaxial cable, and connectors. The wire sizes and connectors required to fabricate the interconnecting cables are shown in Figures 2-5 and 2-6. The actual length of the cables will depend on the location of the equipment in the aircraft.

The R-34A requires a high-voltage power supply, such as an ARC Type DV-11A Dynaverter for a 14-volt receiver, or a DV-10A Dynaverter for a 28-volt receiver. An ARC Type D-10A Dynamotor of the required input voltage rating may also be used. The power supply is installed on the R-34A chassis. If a Dynaverter is used, the R-34A requires a primary power source capable of supplying 3.6 amperes at 13.75 volts dc or 1.8 amperes at 27.5 volts dc, depending upon the voltage rating of the receiver.

A control unit such as the ARC Type C-81A Control Unit is required to operate and tune the R-34A Receiver.

1-5. DESCRIPTION.

Receiver. The R-34A is a crystal-controlled, double-conversion, superheterodyne receiver using 14 subminiature tubes. The circuits of the R-34A are divided among three major assemblies combined to form a single, compact, lightweight unit. The three assemblies are the tuner assembly, which includes a plug-in gearing unit that is secured with two captive screws; the r-f/i-f assembly, which includes the r-f stages, first i-f amplifier, and front panel; and the i-f/a-f assembly, which includes the balance of the i-f amplifier stages, the audio circuits, and the power supply filter.

The i-f/a-f amplifier circuits are constructed on two printed-circuit boards. The audio output of the receiver is automatically decreased when it is operated between 118.00 and 126.90 mc to compensate for the increased percentage of modulation used in that frequency range.

Frequency selection and tuning are electrically actuated. The receiver is crystal-controlled for stability and accuracy of tuning, with 29 crystals used in combinations of two to provide 190 operating channels. Crystal control provides precise tuning and also eliminates the requirement for an external sensitivity control. The R-34A squelch circuit silences usual background noise when no signal is being received.

Control Units. The ARC Type C-81A Control Unit is an edge-lighted plastic-panel control unit designed for use in aircraft equipped with console mounting facilities. It includes all the controls necessary for operation of the R-34A and the associated units of an ARC VOR equipment. From 108.00 through 111.90 mc, automatic switching between VOR and VAR/localizer operation is controlled by the setting of the fractional megacycle selector switch. On even-tenth-megacycle settings the equipment is set up for VOR operation and on odd-tenth-megacycle settings the equipment is set up for VAR/localizer operation. A squelch-circuit-disabling switch[1] is provided, and an off-on switch is mounted on the volume control. The C-81A weighs 1.4 pounds and is 5-3/4 inches wide by 2-1/4 inches high by 2-1/2 inches deep behind the front panel.

The ARC Type C-88A Control Unit is similar to the C-81A but has the added function of simultaneously and automatically controlling an ARC Type R-31A Glide Slope Receiver.

1-6. GENERAL PRINCIPLES OF OPERATION.

The ARC Type R-34A Receiver employs a 14-tube, double-conversion, superheterodyne circuit with a tunable i-f filter and four fixed i-f stages, followed by detector, noise limiter, squelch, and audio stages (see Figure 1-2). R-f signals between 108.00 and 126.90 mc are fed through the double-tuned, cascode r-f amplifier to the first mixer. The output (96.3 to 114.3 mc) from the megacycle crystal oscillator-doubler is also fed to the first mixer to produce the first i-f signal of 11.7 to 12.6 mc. The signal passes through a double-tuned, i-f filter to the second mixer. The output (10.0 to 10.9 mc) from the fractional megacycle crystal oscillator is also fed to the second mixer to produce the second i-f signal of 1.7 mc.

The 1.7-mc frequency is amplified by four double-tuned i-f stages. The four i-f transformers are prealigned, filled with nitrogen, and hermetically sealed. The i-f signal is demodulated by the detector-agc circuit. The detected navigation output is applied to a cathode follower and the audio output to a noise limiter.

The cathode follower couples the navigation output of the R-34A to the associated ARC Type B-13, B-13A, or B-13A-1 Converter. The noise limiter clips noise pulses and passes the audio signal to the first audio amplifier and squelch stage. The squelch control tube cuts off the first audio amplifier when no signal is being received. The audio output stage amplifies the signal, which is fed to the control unit for volume control and audio distribution.

The receiver frequency is selected through remote control of two pawl-driven, ratchet-rotated, crystal drums. The megacycle drum contains 19 crystals which determine the whole-megacycle portion of the channel received, while the fractional megacycle drum contains 10 crystals which determine the tenth-megacycle portion of the channel received. A total of 190 channels with 100-kc spacing is provided.

The r-f amplifier and megacycle oscillator-doubler are linked by a cam and tuning plate to the crystal drum, providing continuous adjustment of the tuned circuits used. Independent upper and lower frequency-limit adjustments allow alignment for optimum tracking. Another cam, driven by the fractional megacycle crystal drum, is linked to the first i-f filter.

[1]Beginning with Serial No. 118, a 100K-ohm linear taper variable resistor, for control of the squelch threshold level, replaces this switch. See Figure 5-1.

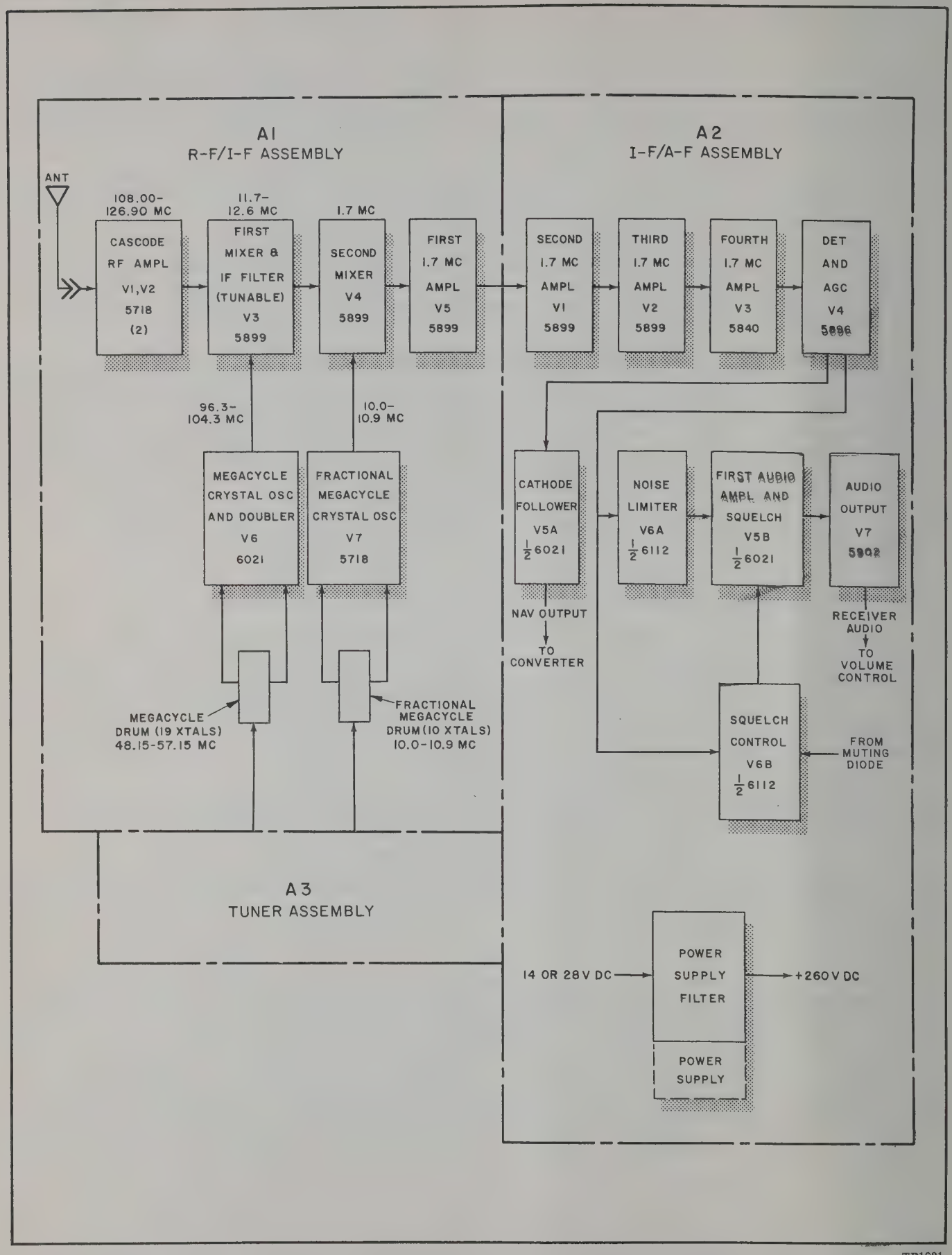

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Figure 1-2. ARC Type R-34A Receiver, Block Diagram

SECTION II

INSTALLATION

2-1. UNPACKING.

Remove all packing material from the packing case and carefully remove the equipment. Inspect the equipment for damage incurred during shipment. Be sure all controls on the control unit work properly. Check the units against the packing slip to be sure all items have been received and removed from the packing case.

2-2. PREINSTALLATION TESTS.

General. The ARC Type R-34A Receiver should be given an overall operational check before installation. The ARC Type H-14A Signal Generator is used to provide simulated omni and localizer signals for navigation equipment testing. The H-14A should be connected in series with a 50-ohm, 6-db attenuator, such as the Boonton Radio Type 505-B, and connected to J1 on the receiver front panel. A Simpson Model 260 multimeter, or equivalent, is used for voltage measurement.

Preliminary Check.

Step 1. Interconnect the R-34A and the associated units of an ARC VOR equipment as shown in Figure 2-5 or 2-6.

Step 2. Unscrew the cover from J3 on the receiver front panel. Connect the multimeter from ground to the link connecting pins A to E on wired plug ARC-11934. Apply rated primary voltage to the receiver and associated power supply. Check for a reading of 260(±10) volts dc.

Step 3. Operate the control unit megacycle channel selector switch to select each channel in turn. Look through the window in the side of the R-34A dust cover (the converter may be removed for this test) to check for agreement between the crystal drum position and the channel selected.

Step 4. Repeat Step 3, using the fractional megacycle channel selector switch, and compare the position of the fractional megacycle crystal drum with the channel selected.

VOR and Squelch Operation Check.

Step 1. Connect the H-14A through the external 6-db attenuator to J1 on the R-34A front panel.

Step 2. Calibrate the H-14A as described in its operating manual. Set the OMNI TRACK switch to 0°. Set the MC switch to B (114.9 mc). Place the MODULATION switch in OMNI position. Turn the IDENTIFIER on. Adjust the ATTENUATOR dial for an indicated 5 μv.

Step 3. Set the control unit channel selector switches to 114.90 mc. Turn the VOL control clockwise. The identification signal from the H-14A should be audible in the headset or speaker.

Step 4. Increase the H-14A ATTENUATOR setting to 10K μv. Select a 0° "TO" course on the ARC Type IN-10 Course Indicator. The vertical-pointer flag should not be visible and the vertical cross-pointer needle should move to the center for an on-course indication.

Step 5. Slowly decrease the H-14A output to 10 μv and observe the vertical cross-pointer needle. The needle should stay within the 3/16-inch diameter black circle located in the center of the dial and the vertical-pointer flag should remain hidden.

Step 6. Loosen the locknut on the SQUELCH control on the R-34A front panel and rotate the control with a screwdriver to its maximum clockwise position. Decrease the H-14A output until the receiver is

muted, which indicates that the squelch is operating. The H-14A output should be between 4 and 6 μv as read on the ATTENUATOR dial. Tighten the locknut.

Note

This step is not the final squelch adjustment. Refer to paragraph 2-6.

Localizer Operation Check.

Step 1. Set the H-14A MC switch to A (110.9 mc). Place the MODULATION switch in the AMP LOC ⓘ (needle center) position. Adjust the ATTENUATOR dial for an indicated 10K μv.

Step 2. Set the control unit channel selector switches to 110.90 mc. The vertical-pointer flag should not be visible and the vertical cross-pointer needle should move to the center for an on-course indication.

Step 3. Slowly decrease the H-14A output to 10 μv and observe the vertical cross-pointer needle. The needle should stay within the 3/16-inch diameter black circle located in the center of the dial and the vertical-pointer flag should remain hidden.

Step 4. Place the H-14A MODULATION switch in the AMP LOC ↙ (needle left) position. Adjust the ATTENUATOR dial for an indicated 1K μv. The vertical cross-pointer needle should swing almost to the edge of the blue segment of the IN-10.

Step 5. Place the H-14A MODULATION switch in the AMP LOC ↘ (needle right) position. The vertical cross-pointer needle should swing almost to the edge of the yellow segment of the IN-10.

2-3. INSTALLATION CONSIDERATIONS.

The R-34A is designed for remote operation and may be installed in any convenient location in the aircraft. The location and installation will vary with each particular type of aircraft; however, the following general requirements, applicable to all types of aircraft, should be considered.

1. Compare the space requirements shown in the outline dimension drawings, Figures 2-1 and 2-2, with the area being considered.
2. Locate the R-34A and its associated units so that they are accessible for inspection and maintenance, and in an area reasonably free from vibration, with sufficient clearance for sway and ventilation.
3. Keep the interconnecting cables (especially the antenna cable) to minimum lengths.
4. Leave enough space to facilitate making cable connections and arrange each cable so that shock-mount travel is not restricted.
5. No sharp bends should be made in any of the cables.
6. Cables should not be run where they may be subjected to excessively high temperatures.
7. When the R-34A and C-81A are used to replace an R-13B or R-32 Receiver and a C-1254 or C-1254A Control Unit, respectively, a cable, which replaces the mechanical linkage, must be fabricated to connect the R-34A to the C-81A Control Unit.

2-4. INSTALLATION.

General. The R-34A is interchangeable with the ARC Type R-13B and R-32 Receivers and may replace either of these units in the E-14, E-15, E-17, or E-18 Rack. The C-81A is interchangeable with the ARC Type C-1254 and C-1254A Control Units. Installation dimensions for the R-34A Receiver and E-14 Rack installed on an ARC Type M-25 Mounting are shown in Figure 2-1.

Step 1. Drill the aircraft mounting surface for eight No. 10 binding-head screws, located as shown in

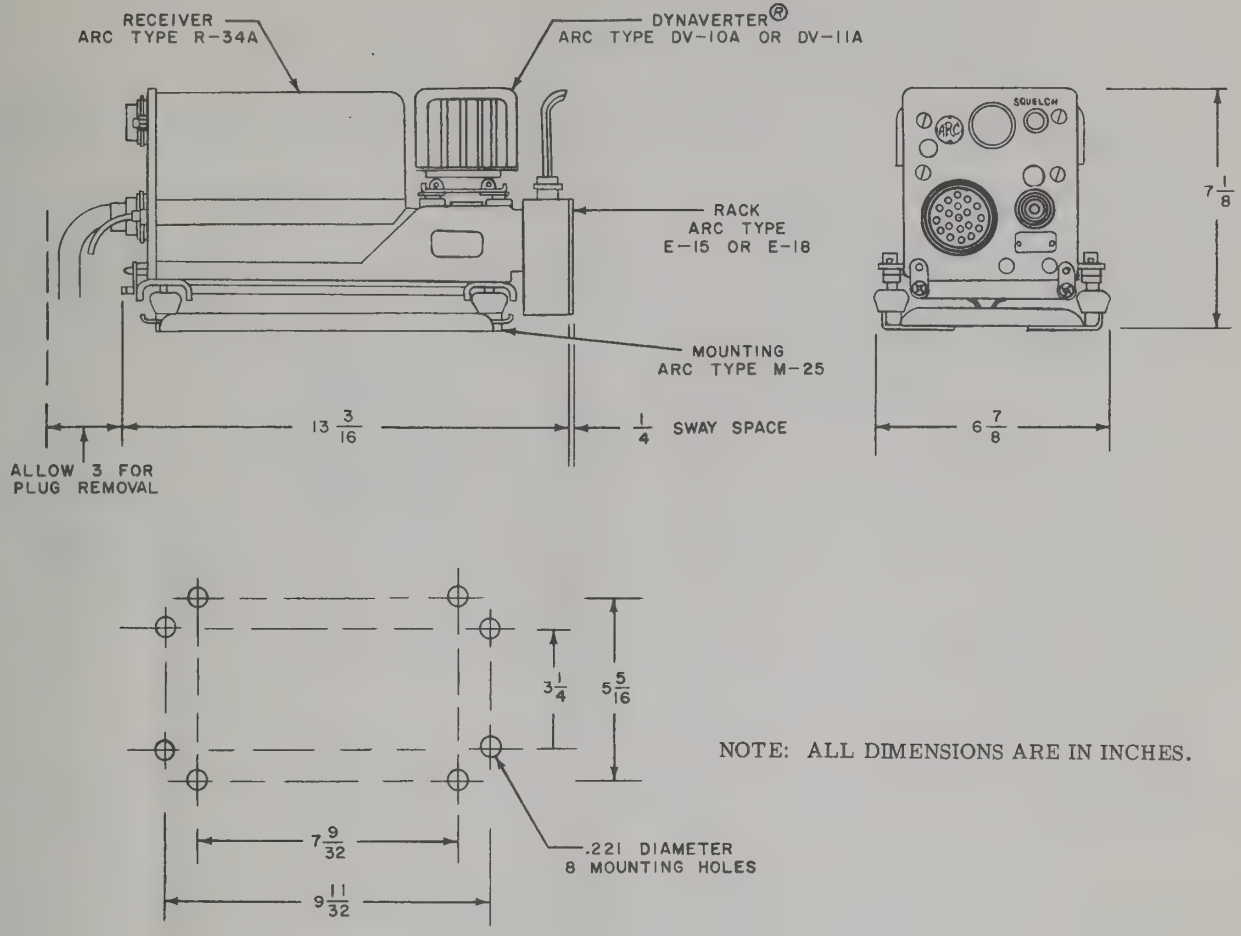

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Figure 2-1. ARC Type R-34A Receiver with Rack and Mounting, Outline and Mounting Dimensions

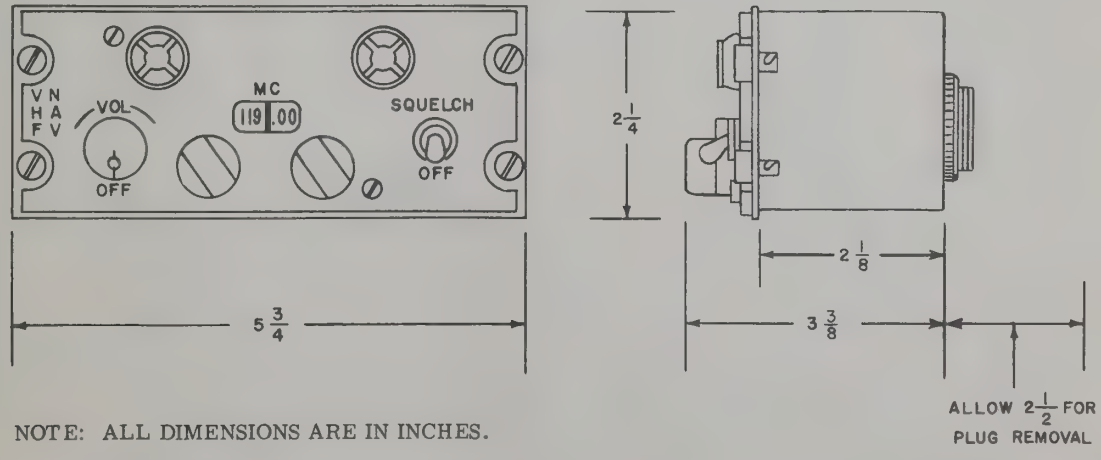

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Figure 2-2. ARC Type C-81A Control Unit, Outline Dimensions

Figure 2-3. The mounting surface should be clean, bare metal to insure proper grounding of the unit.

Note

The M-25 may be used as a template for locating the mounting holes.

Step 2. Insert the screws into the M-25 mounting holes and place the M-25 in position. Secure the mounting with nuts and lockwashers.

Step 3. Open the snapslides on the rack, place the rack on the mounting, and close the snapslides to engage the studs.

Step 4. Loosen the two knurled screws on the front of the E-14 and swing the mounting links downward.

Step 5. Slide the R-34A into the rack and press inward until J2 at the rear of the receiver is fully engaged with the connector in the rack.

Step 6. Place the mounting links over the mounting studs on the R-34A and tighten the knurled screws until the R-34A is secured.

Installation of Control Unit. Outline dimensions for the C-81A Control Unit are shown in Figure 2-2. The C-81A is designed for installation on a standard AN console panel. It is secured to the console by four Dzus fasteners.

Installation of Channel Selector Switch. If Channel Selector Switch ARC-22750 is used in place of the C-81A Control Unit, see Figures 2-3 and 2-4 for mounting dimensions and assembly details.

2-5. INTERCONNECTION.

Interconnection Diagrams. Interconnection diagrams for the R-34A used in ARC Type 15F VHF Navigation Equipment are shown in Figures 2-5 and 2-6. The types and wire sizes required are noted on each of these diagrams.

When the R-34A is used for retrofit in ARC Type 15C, 15D, or 15E Equipment, no change in existing cabling is required; however, a cable, which replaces the mechanical linkage, must be fabricated for connection of the new control unit to the receiver (see Figure 2-5, 2-6, or 2-7).

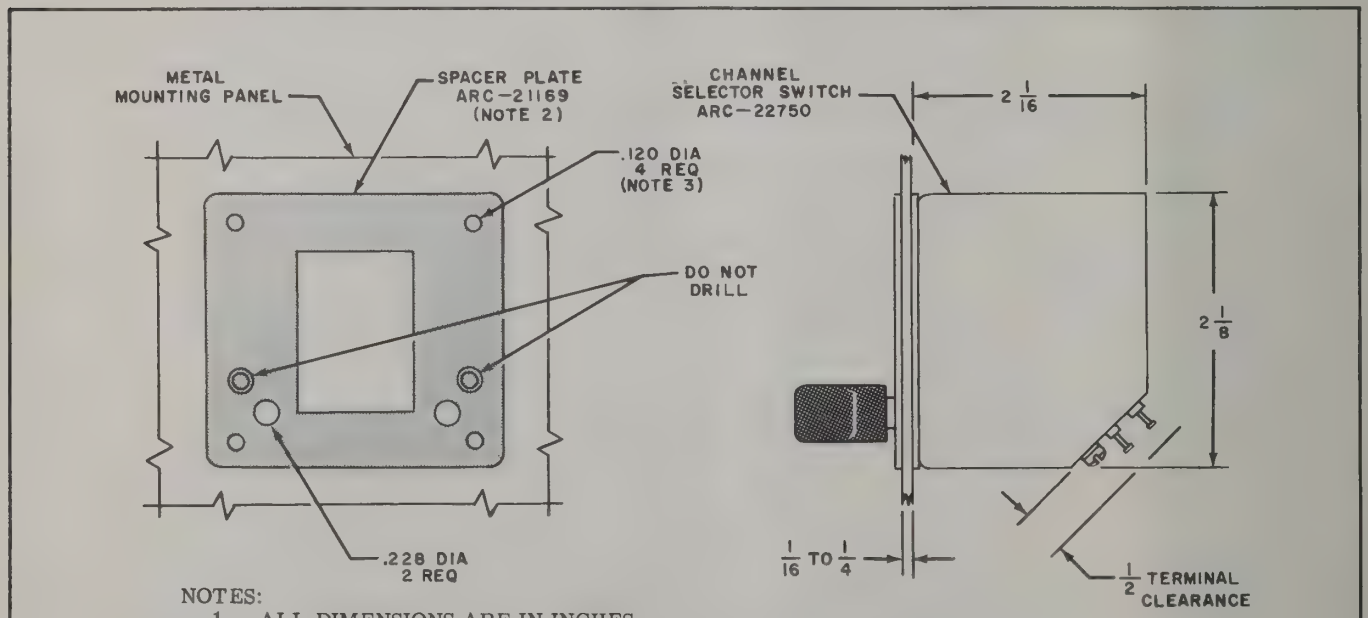
METAL MOUNTING PANEL
SPACER PLATE ARC-21169 (NOTE 2)
CHANNEL SELECTOR SWITCH ARC-22750
2 1/16
.120 DIA 4 REQ (NOTE 3)
DO NOT DRILL
2 1/8
.228 DIA 2 REQ
1/16 TO 1/4
1/2 TERMINAL CLEARANCE
NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
2. FOR LAYOUT, USE ARC-21169 SPACER PLATE AS TEMPLATE.
3. IF 3/16-INCH PLASTIC PANEL IS USED, COUNTERSINK HOLES IN METAL MOUNTING PANEL TO 0.233-INCH DIAMETER.

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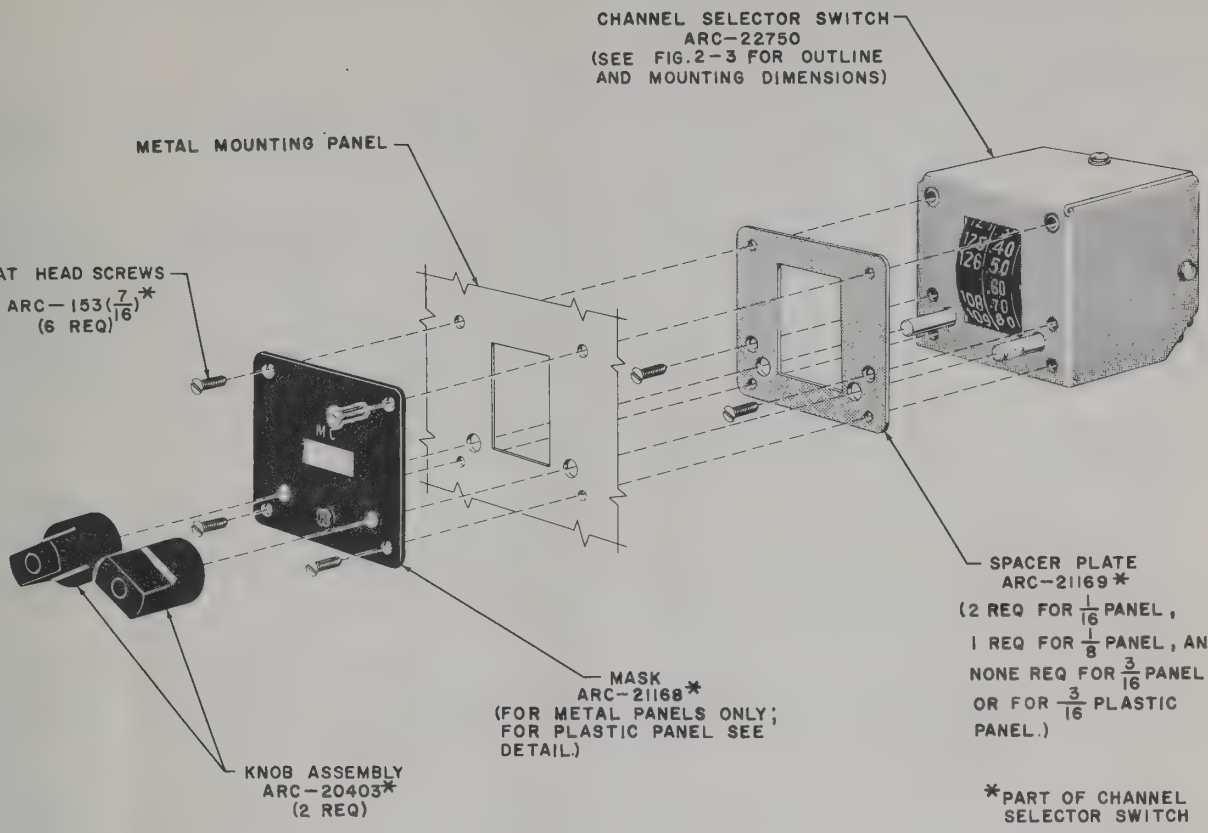
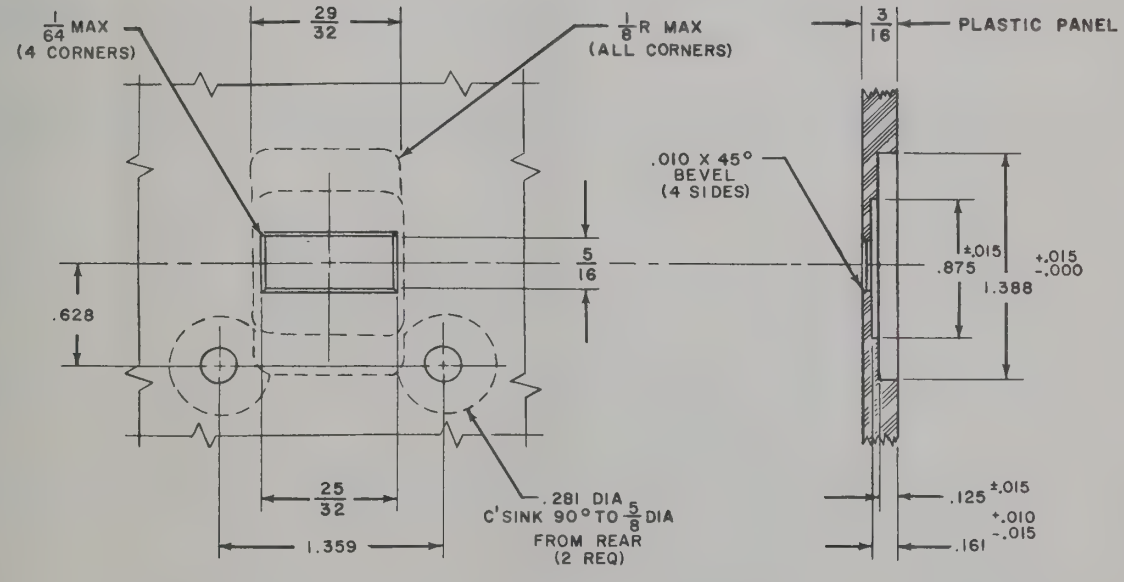
Figure 2-3. Channel Selector Switch ARC-22750, Mounting Dimensions





NOTE: ALL DIMENSIONS ARE IN INCHES.

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Figure 2-4. Channel Selector Switch ARC-22750, Assembly Details

When an associated unit such as the ARC Type T-25A VHF Transmitter requires high voltage from the R-34A power supply, wired plug ARC-11934 should be removed from J3 on the front panel, and the transmitter wired as shown in Figure 2-8.

Squelch Control Circuits. The method used to control the squelch circuit may be selected as desired. Any one of the following control circuits may be used:

Local Squelch. Connect pins E and F of J2 on the receiver front panel for local squelch action. The front panel SQUELCH control is adjusted after installation for a particular threshold level.

Local squelch and disable. Connect pins E and F of J2 on the receiver front panel and include an SPST switch to connect pin F of J2 to pin S (ground). When pin F is grounded, the receiver squelch action is disabled; the presence of noise will indicate that the receiver is operating. This squelch circuit is used in the C-81A.

Remote squelch. For remote squelch control of the squelch level, a 100,000-ohm linear taper variable resistor is connected between pins F and S of J2 on the receiver front panel. The resistor should be wired for maximum resistance in the muted position. This squelch circuit is used in the ARC Type C-88A Control Unit.

Dual Omni Installation. When the R-34A replaces R-13B or R-32 Receivers in a dual VOR installation using a single antenna, interconnect the receivers and antenna as follows:

Step 1. Install a UG-274/U "Tee" adapter (ARC-14129) on the ANT input connector of one R-34A.

Step 2. Connect the A-13B Antenna to one input of the UG-274/U connector. Although the length of the RG-58/U cable is not critical, best results are obtained by using a quarter-wave, odd-multiple length (for example: 17-1/4 inches, 51-3/4 inches, 86-1/4 inches).

Step 3. Interconnect the ANT input connector of the second R-34A and the other input of the UG-274/U connector with a half-wave-multiple length of RG-58/U cable (for example: 34-1/2 inches, 69 inches, 138 inches).

2-6. INITIAL ADJUSTMENTS.

Local Squelch Adjustment. After the R-34A is installed in the airplane, adjust the SQUELCH control as follows:

Step 1. Loosen the SQUELCH control locknut and turn the SQUELCH control fully counterclockwise.

Step 2. Select a channel where no signal is received.

Step 3. With the aircraft's engines and all electrical equipment operating normally, turn the SQUELCH control clockwise until the receiver noise output is just silenced.

Step 4. If the airplane is very noisy and the receiver is not silenced with the control at maximum clockwise position, a small change of the i-f sensitivity may be made. The i-f sensitivity control is located under a button plug at the upper left of the front panel. Adjust this control with a screwdriver counterclockwise approximately 1/8 turn to reduce noise sensitivity.

Step 5. Tighten the SQUELCH control locknut, being careful not to disturb the control setting.

Remote Squelch Adjustment. If a remote squelch control is installed, the SQUELCH control on the front panel of the R-34A is inactive. The remote squelch may be adjusted as desired by the operator.

Converter Balance Adjustment. The R-34A and the converter in use should be zero-balanced after installation as follows:

Step 1. Connect the H-14A Signal Generator to an antenna and adjust the H-14A to radiate a 0° "TO" omni signal at 114.9 mc. Adjust the H-14A output for an estimated 100-μv signal strength at the receiver.

Step 2. Set the IN-10 course selector to exactly 0°.

Step 3. Adjust R225, located under the small cover at the rear of the converter, for an on-course indication of the vertical cross-pointer needle.

Step 4. Adjust the H-14A for a needle-center localizer signal (AMP LOC ⓘ) at 110.9 mc, with an estimated 100-μv signal strength at the receiver.

Step 5. Adjust R264, located under the cover on the converter front panel, for an on-course indication of the vertical cross-pointer needle.

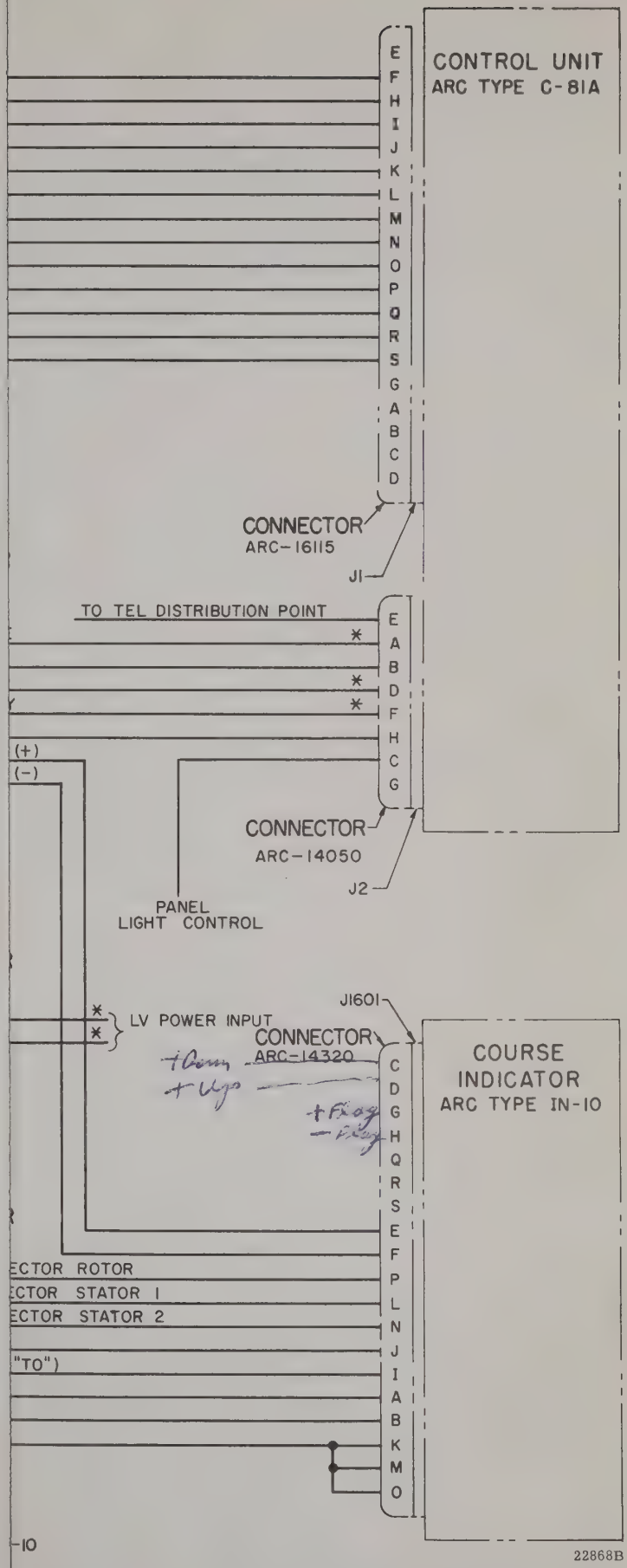


Figure 2-5. ARC Type 15F VHF Navigation Equipment, One-rack Installation, Interconnection Diagram

When an associated unit such as the ARC Type T-25A VHF Transmitter requires high voltage from the R-34A power supply, wired plug ARC-11934 should be removed from J3 on the front panel, and the transmitter wired as shown in Figure 2-8.

Squelch Control Circuits. The method used to control the squelch circuit may be selected as desired. Any one of the following control circuits may be used:

Local Squelch. Connect pins E and F of J2 on the receiver front panel for local squelch action. The front panel SQUELCH control is adjusted after installation for a particular threshold level.

Local squelch and disable. Connect pins E and F of J2 on the receiver front panel and include an SPST switch to connect pin F of J2 to pin S (ground). When pin F is grounded, the receiver squelch action is disabled; the presence of noise will indicate that the receiver is operating. This squelch circuit is used in the C-81A.

Remote squelch. For remote squelch control of the squelch level, a 100,000-ohm linear taper variable resistor is connected between pins F and S of J2 on the receiver front panel. The resistor should be wired for maximum resistance in the muted position. This squelch circuit is used in the ARC Type C-88A Control Unit.

Dual Omni Installation. When the R-34A replaces R-13B or R-32 Receivers in a dual VOR installation using a single antenna, interconnect the receivers and antenna as follows:

Step 1. Install a UG-274/U "Tee" adapter (ARC-14129) on the ANT input connector of one R-34A.

Step 2. Connect the A-13B Antenna to one input of the UG-274/U connector. Although the length of the RG-58/U cable is not critical, best results are obtained by using a quarter-wave, odd-multiple length (for example: 17-1/4 inches, 51-3/4 inches, 86-1/4 inches).

Step 3. Interconnect the ANT input connector of the second R-34A and the other input of the UG-274/U connector with a half-wave-multiple length of RG-58/U cable (for example: 34-1/2 inches, 69 inches, 138 inches).

2-6. INITIAL ADJUSTMENTS.

Local Squelch Adjustment. After the R-34A is installed in the airplane, adjust the SQUELCH control as follows:

Step 1. Loosen the SQUELCH control locknut and turn the SQUELCH control fully counterclockwise.

Step 2. Select a channel where no signal is received.

Step 3. With the aircraft's engines and all electrical equipment operating normally, turn the SQUELCH control clockwise until the receiver noise output is just silenced.

Step 4. If the airplane is very noisy and the receiver is not silenced with the control at maximum clockwise position, a small change of the i-f sensitivity may be made. The i-f sensitivity control is located under a button plug at the upper left of the front panel. Adjust this control with a screwdriver counterclockwise approximately 1/8 turn to reduce noise sensitivity.

Step 5. Tighten the SQUELCH control locknut, being careful not to disturb the control setting.

Remote Squelch Adjustment. If a remote squelch control is installed, the SQUELCH control on the front panel of the R-34A is inactive. The remote squelch may be adjusted as desired by the operator.

Converter Balance Adjustment. The R-34A and the converter in use should be zero-balanced after installation as follows:

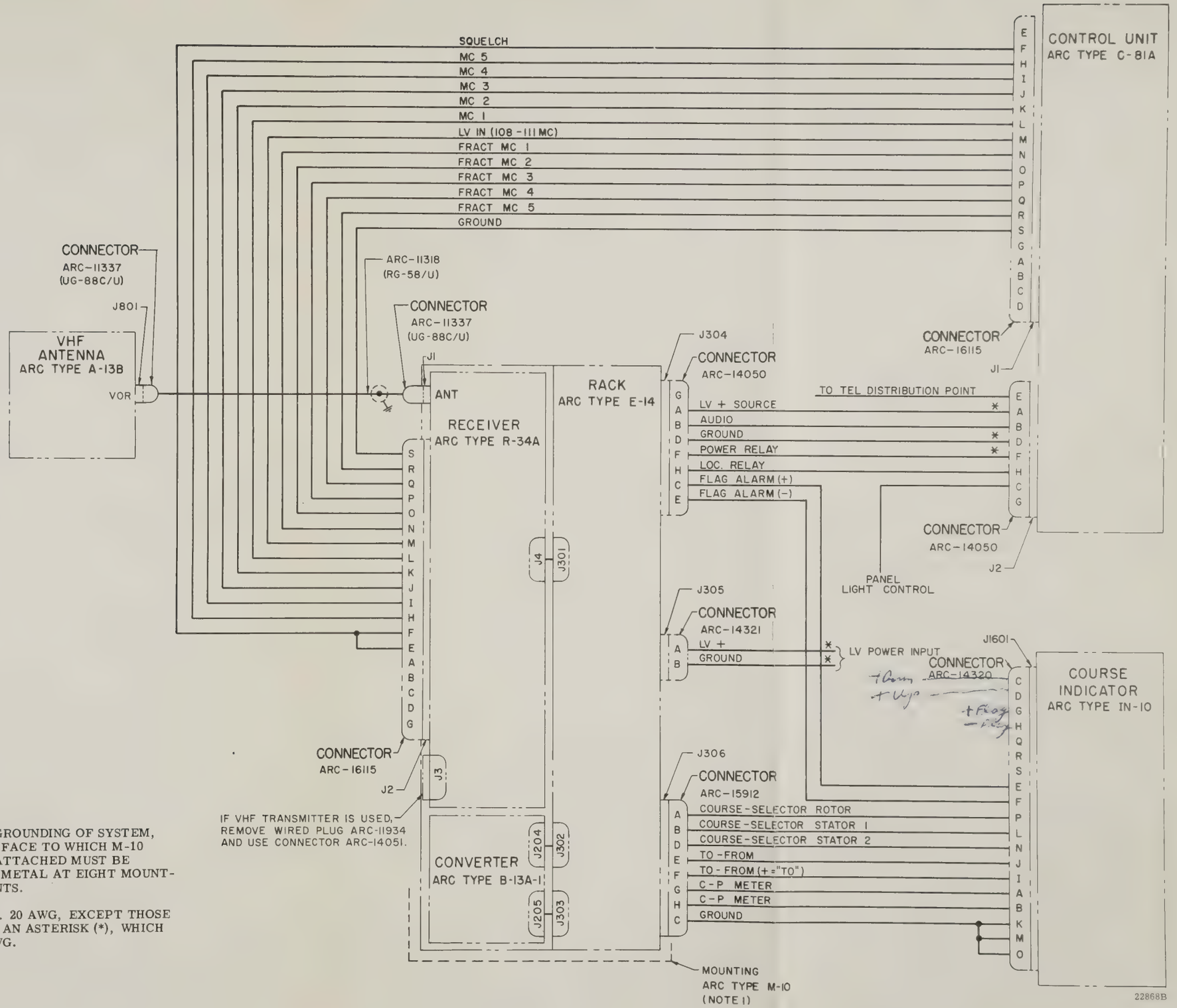
Step 1. Connect the H-14A Signal Generator to an antenna and adjust the H-14A to radiate a 0° "TO" omni signal at 114.9 mc. Adjust the H-14A output for an estimated 100-μv signal strength at the receiver.

Step 2. Set the IN-10 course selector to exactly 0°.

Step 3. Adjust R225, located under the small cover at the rear of the converter, for an on-course indication of the vertical cross-pointer needle.

Step 4. Adjust the H-14A for a needle-center localizer signal (AMP LOC ⓘ) at 110.9 mc, with an estimated 100-μv signal strength at the receiver.

Step 5. Adjust R264, located under the cover on the converter front panel, for an on-course indication of the vertical cross-pointer needle.

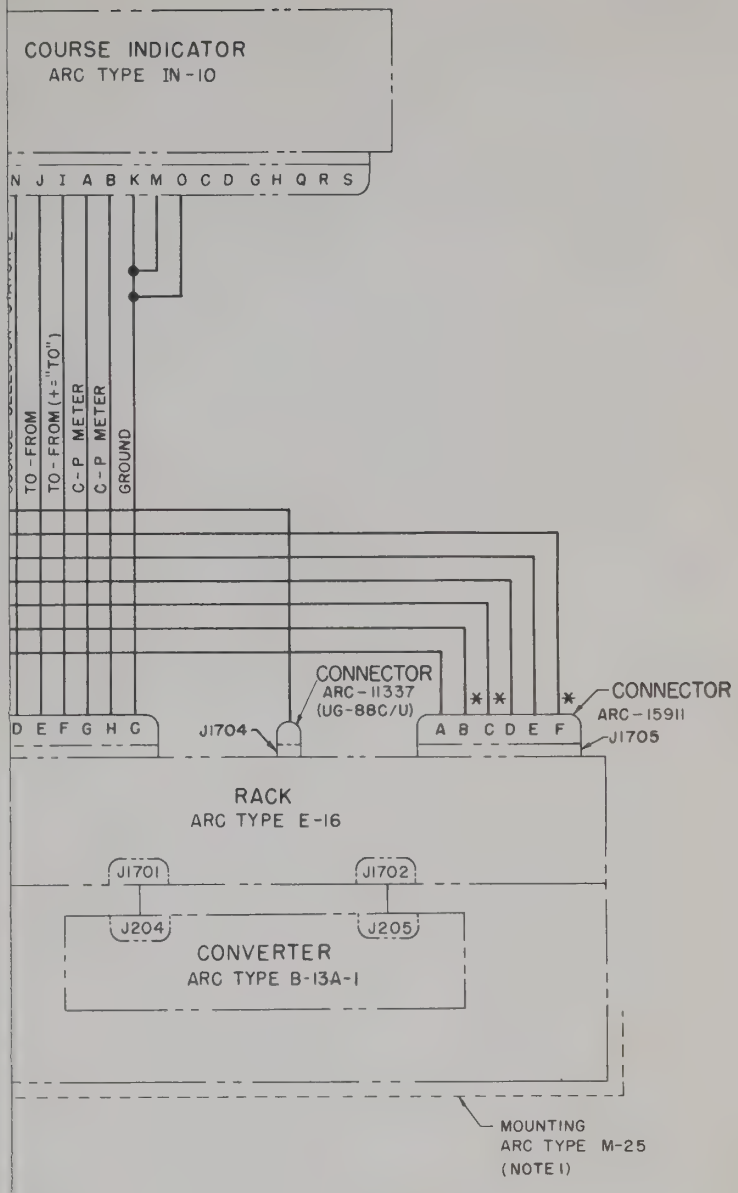


NOTES:

1. FOR PROPER GROUNDING OF SYSTEM, AIRCRAFT SURFACE TO WHICH M-10 MOUNTING IS ATTACHED MUST BE CLEAN, BARE METAL AT EIGHT MOUNTING HOLE POINTS.

2. WIRES ARE NO. 20 AWG, EXCEPT THOSE MARKED WITH AN ASTERISK (*), WHICH ARE NO. 16 AWG.

Figure 2-5. ARC Type 15F VHF Navigation Equipment, One-rack Installation, Interconnection Diagram



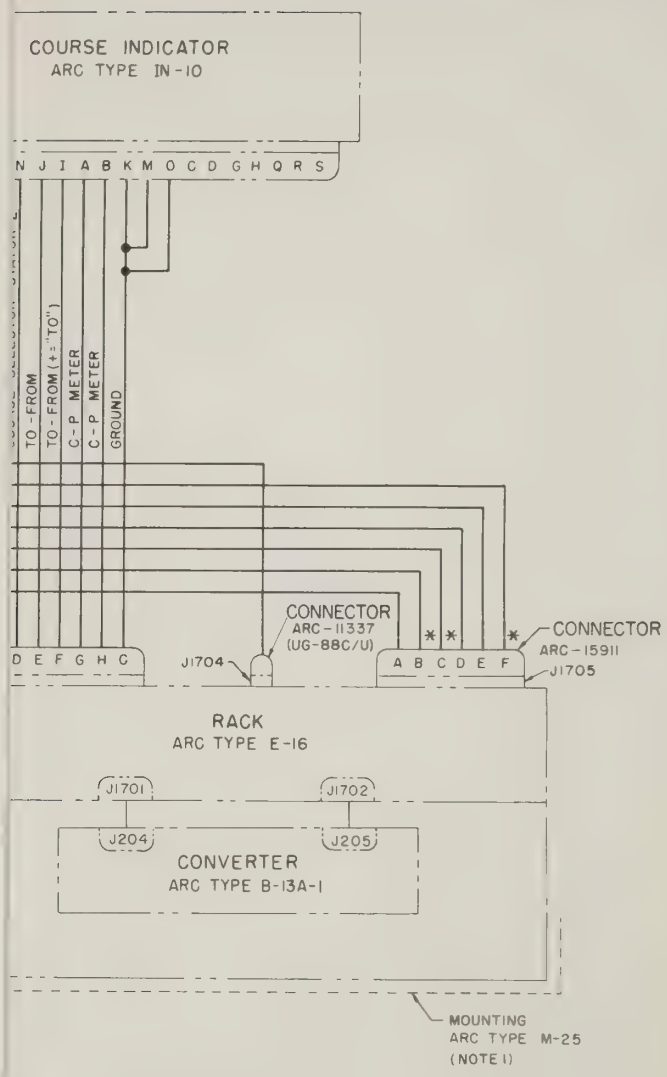
SED,
C-11934
-14051.

OUNDING OF SYSTEM,
ACE TO WHICH M-25
TACHED MUST BE
ETAL AT EIGHT MOUNT-
S.

20 AWG, EXCEPT THOSE
N ASTERISK (*), WHICH

22867B

Figure 2-6. ARC Type 15F VHF Navigation Equipment, Two-rack Installation, Interconnection Diagram



SED,
C-11934
-14051.

OUNDING OF SYSTEM,
ACE TO WHICH M-25
TACHED MUST BE
ETAL AT EIGHT MOUNT-
S.

20 AWG, EXCEPT THOSE
N ASTERISK (*), WHICH
.

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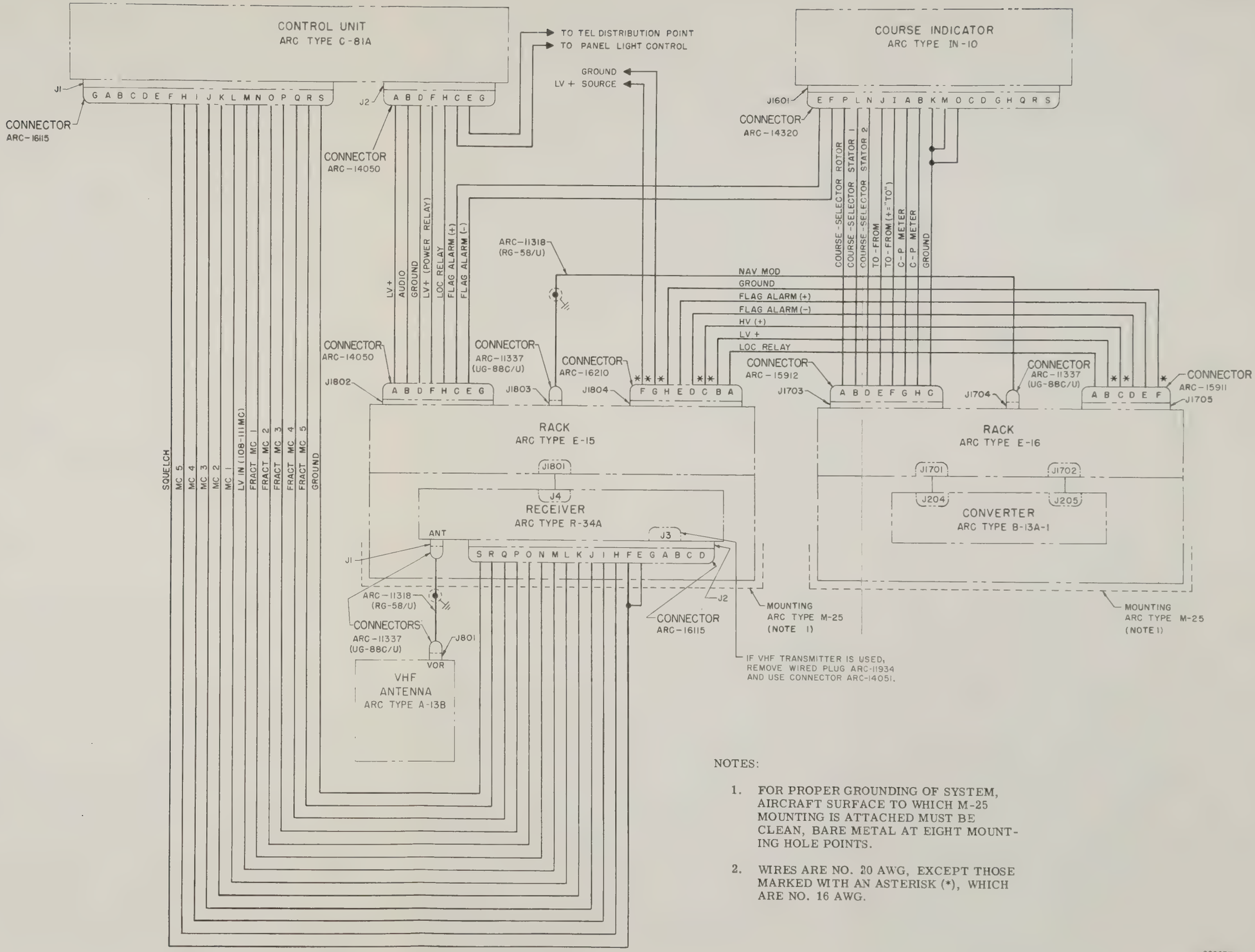
Figure 2-6. ARC Type 15F VHF Navigation Equipment, Two-rack Installation, Interconnection Diagram



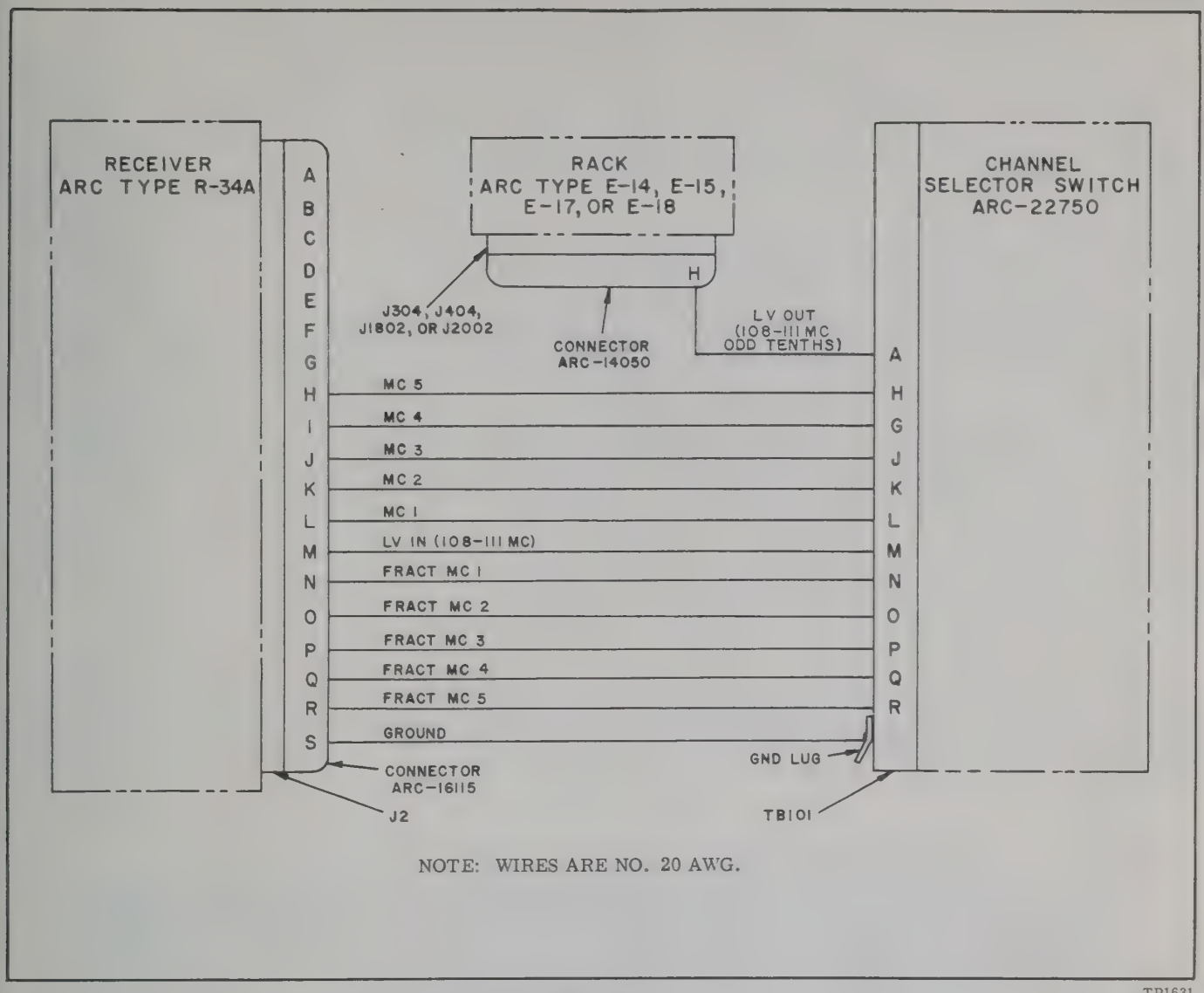
NOTES:

1. FOR PROPER GROUNDING OF SYSTEM, AIRCRAFT SURFACE TO WHICH M-25 MOUNTING IS ATTACHED MUST BE CLEAN, BARE METAL AT EIGHT MOUNTING HOLE POINTS.

2. WIRES ARE NO. 20 AWG, EXCEPT THOSE MARKED WITH AN ASTERISK (*), WHICH ARE NO. 16 AWG.

22867B

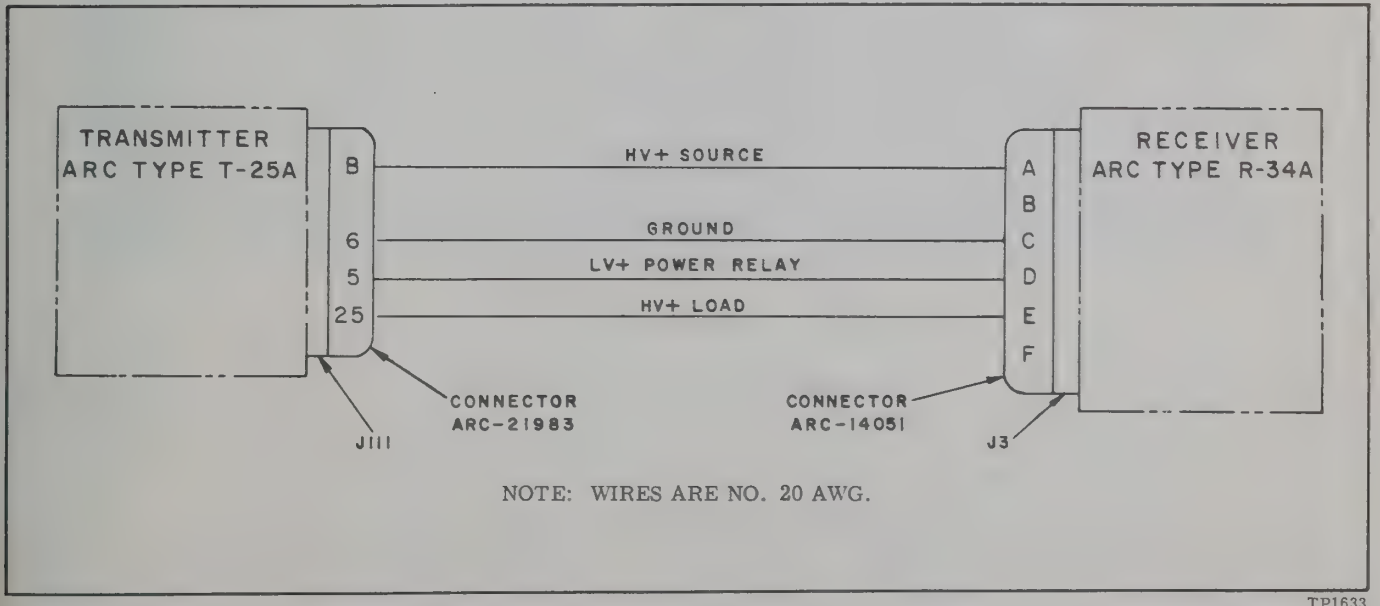
Figure 2-6. ARC Type 15F VHF Navigation Equipment, Two-rack Installation, Interconnection Diagram



NOTE: WIRES ARE NO. 20 AWG.

TP1631

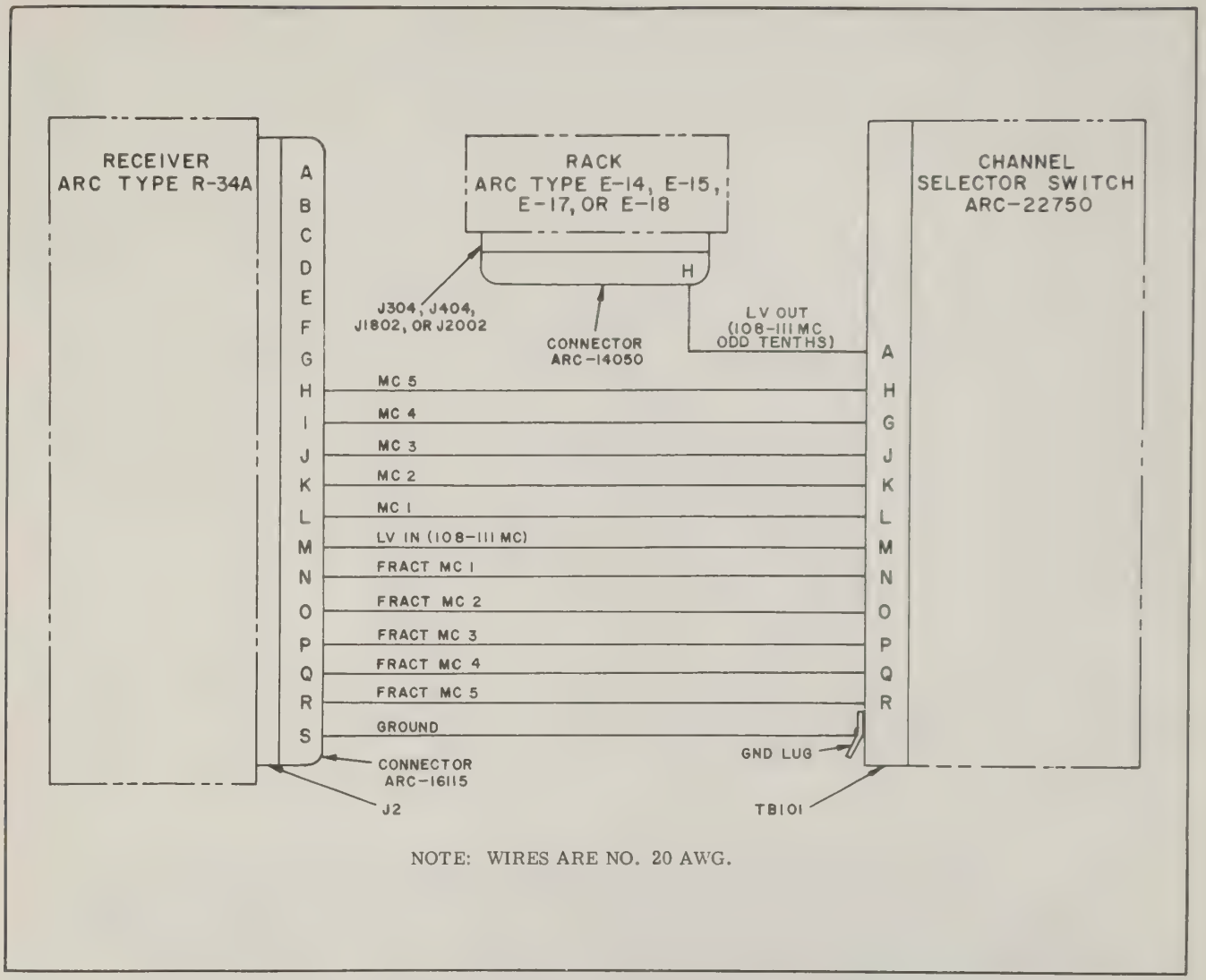
Figure 2-7. ARC Type R-34A Receiver with Channel Selector Switch ARC-22750, Interconnection Diagram



NOTE: WIRES ARE NO. 20 AWG.

TP1633

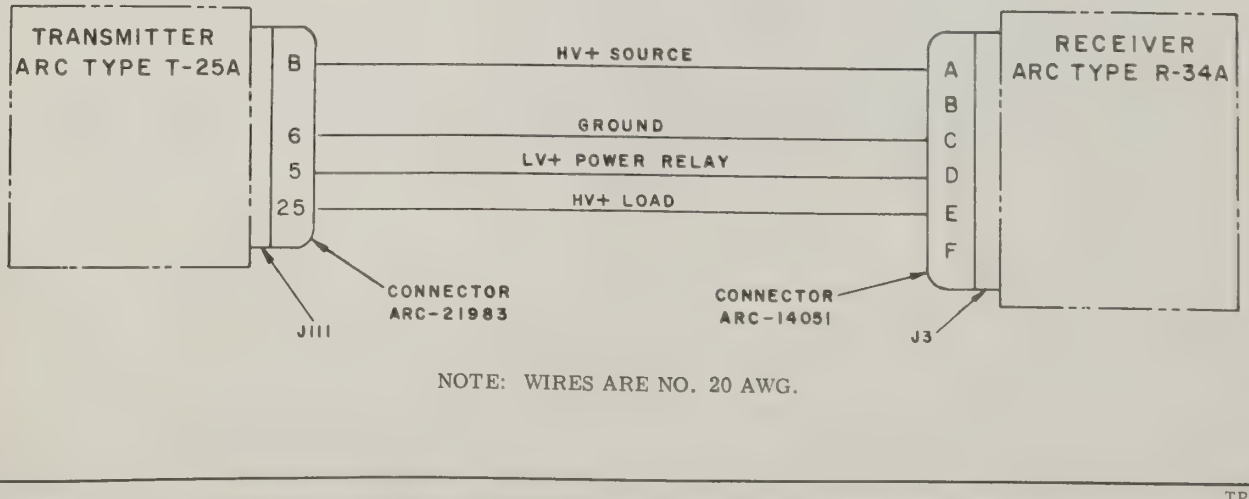
Figure 2-8. ARC Type R-34A Receiver with ARC Type T-25A VHF Transmitter, Interconnection Diagram



NOTE: WIRES ARE NO. 20 AWG.

TP1631

Figure 2-7. ARC Type R-34A Receiver with Channel Selector Switch ARC-22750, Interconnection Diagram



NOTE: WIRES ARE NO. 20 AWG.

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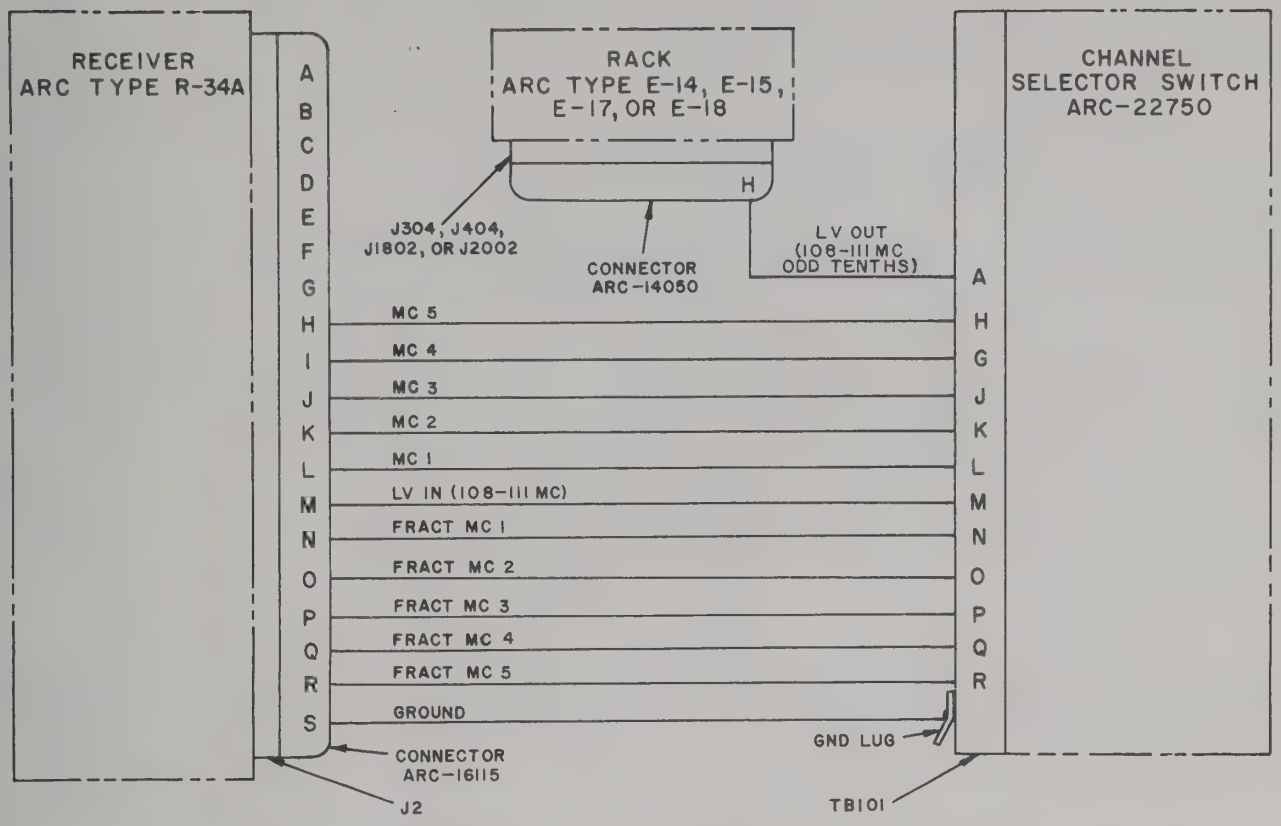
Figure 2-8. ARC Type R-34A Receiver with ARC Type T-25A VHF Transmitter, Interconnection Diagram



NOTE: WIRES ARE NO. 20 AWG.

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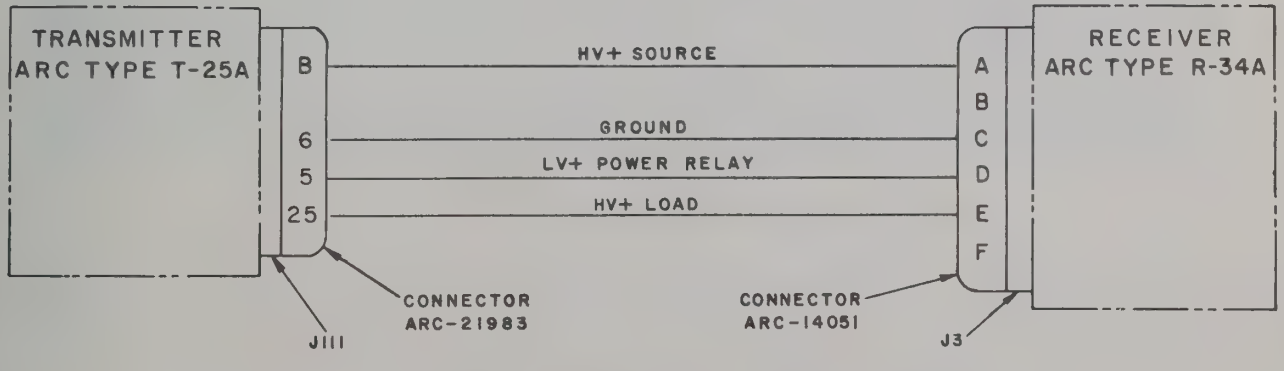
Figure 2-7. ARC Type R-34A Receiver with Channel Selector Switch ARC-22750, Interconnection Diagram



NOTE: WIRES ARE NO. 20 AWG.

TP1633

Figure 2-8. ARC Type R-34A Receiver with ARC Type T-25A VHF Transmitter, Interconnection Diagram

SECTION III

OPERATION

3-1. OPERATING CONTROLS.

The ARC Type R-34A Receiver operating controls are located externally and may be part of a special control unit, such as the ARC Type C-81A or C-88A, or a custom control installation using Channel Selector Switch ARC-22750. In general, the following controls may be available: a power on-off switch, a volume control, a channel selector switch assembly, and a squelch control.

The C-81A, shown in Figure 3-1, is an edge-lighted, plastic-panel control unit designed for use in aircraft equipped with console mounting facilities. Channel Selector Switch ARC-22750, used in custom control installations, is similar to the channel selector switch assembly used in the C-81A. The C-81A controls and their functions are listed in Table 3-1.

The local SQUELCH control, located on the R-34A front panel, or the remote squelch control, should be adjusted as described in paragraph 2-6.

3-2. OPERATING PROCEDURES.

The operating procedures described in the instruction books for ARC Type 15C, 15D, and 15E VHF Navigation Receiving Equipment are applicable to the use of the R-34A, except that "whistle-through" tuning and the separate OMNI-VAR LOC switch are not used.

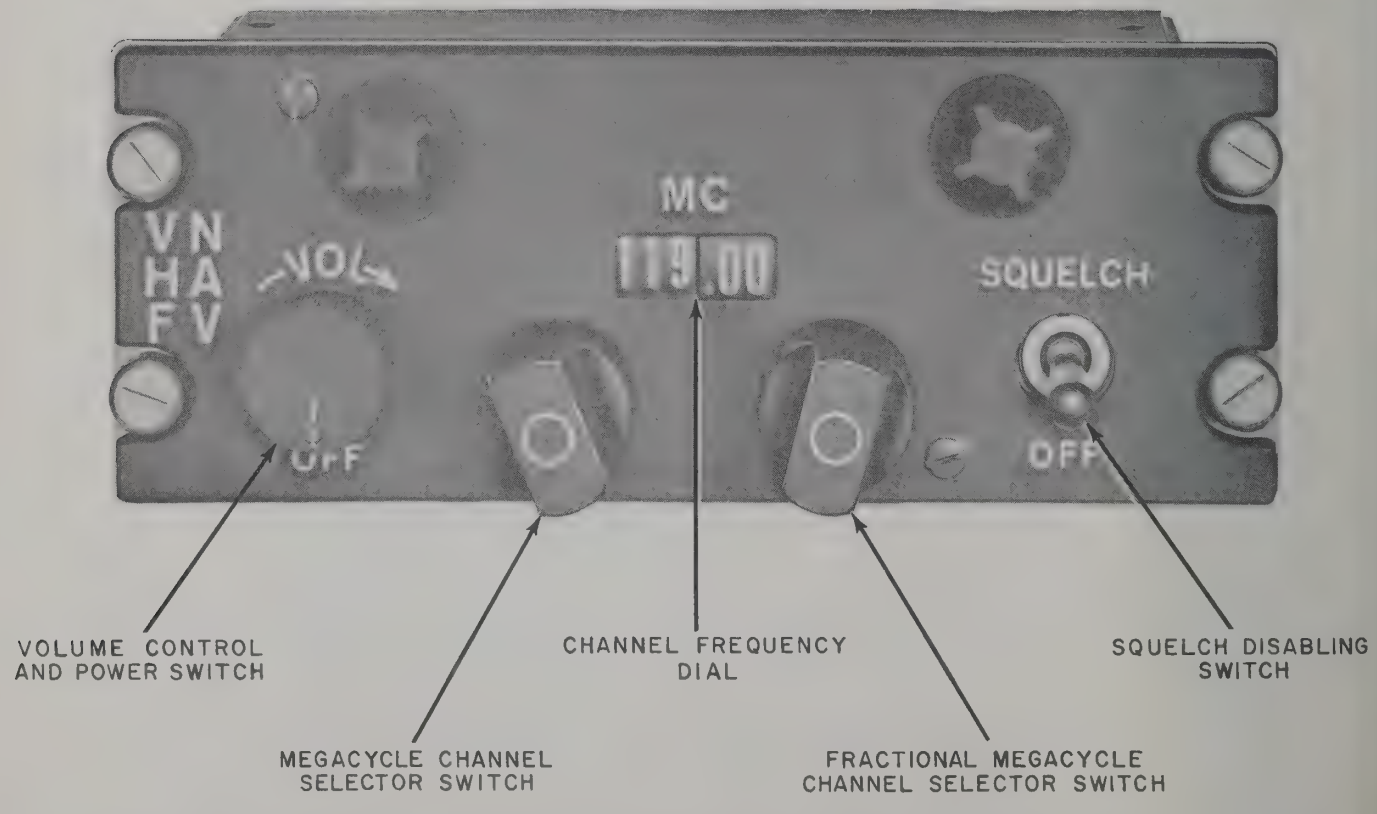


Figure 3-1. ARC Type C-81A Control Unit, Operating Controls

TABLE 3-1. OPERATING CONTROLS

Control	Function
Volume Control and Power Switch (VOL-OFF)	Controls receiver audio level and is the power off-on switch. Clockwise rotation of the control knob from the OFF position applies primary power to the receiver. Further clockwise rotation increases the audio level of the receiver.
Megacycle Channel Selector Switch (108 to 126 MC)	Selects the megacycle channel frequency as indicated on the megacycle portion of the channel frequency dial (MC). Clockwise rotation of the selector knob increases frequency in 1.0-mc steps from 108 to 126 mc. Beyond 126 mc, the selector indicates a blank space, and then returns to 108 mc. The selector knob may be rotated in either direction to reach the desired megacycle frequency.
Fractional Megacycle Channel Selector Switch (0.00 to 0.90 MC)	Selects the fractional megacycle channel frequency as indicated on the fractional megacycle portion of the channel frequency dial (MC). Clockwise rotation of the selector knob increases frequency in 0.1-mc steps from 0.00 mc to 0.90 mc. Beyond 0.90 mc the selector returns to 0.00 mc. The selector knob may be rotated in either direction to reach the desired fractional megacycle frequency. In even-tenth positions from 108.0 through 111.8 mc, and in all positions from 112.0 through 117.9 mc, the selector knob automatically selects the VOR mode of operation for the associated navigation converter. In odd-tenth positions from 108.1 through 111.9 mc, the localizer mode of operation is selected. Frequencies from 118.00 to 126.90 mc are available for vhf communication.
Squelch Disabling Switch (SQUELCH-OFF)	In SQUELCH position, receiver squelch circuit is activated when signal is not present, muting receiver to prevent background noise. In OFF position, disables squelch circuit so that operator may check that receiver is operating.

SECTION IV

MAINTENANCE

4-1. INTRODUCTION.

WARNING

Voltages are present in this equipment which are dangerous and which may be fatal if contacted. Observe all safety precautions.

This section contains maintenance data for the ARC Type R-34A Receiver. Included are a list of the test equipment required, preventive maintenance instructions, removal and replacement procedures, and adjustment and alignment information. Schematic diagrams are included in Section V.

4-2. TEST EQUIPMENT.

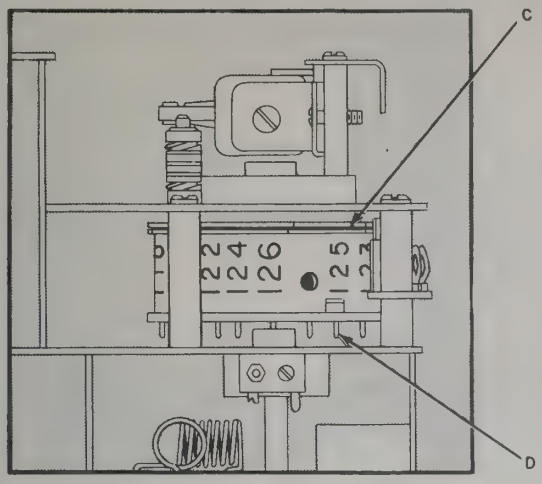
Table 4-1 lists the test equipment required for maintenance of the R-34A (equivalent items may be substituted).

TABLE 4-1. TEST EQUIPMENT

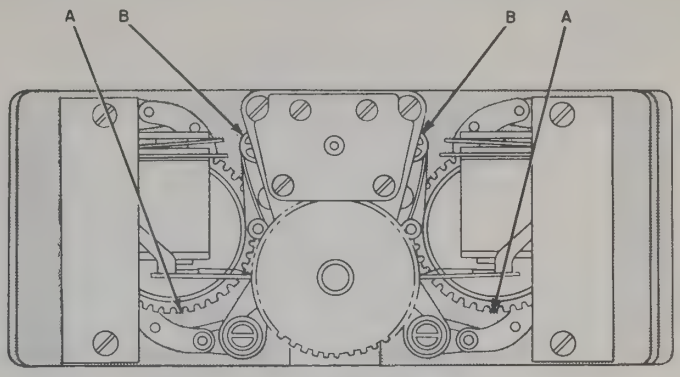
Qty	Name	Designation	Characteristics
1	Attenuator	Boonton Radio Type 505-B	50 ohms, 6 db
1	Low-voltage Supply	—	14 or 28 volts with voltmeter
1	Multimeter	Simpson Model 260	20,000 ohms/volt
1	Signal Generator	ARC Type H-14A	110.9 and 114.9 mc
1	Signal Generator	Boonton Radio Type 211-A	108 to 126.9 mc
1	Signal Generator	Measurements Model 65-B	1.7 and 11.7 to 12.6 mc
1	Spline Wrench	Bristol No. 4	—
1	Tuning Wand	—	Teflon tuning wand equipped with iron and brass tips
1	Vacuum Tube Voltmeter	Ballantine Model 300	—
1	Vacuum Tube Voltmeter	Hewlett-Packard Model 410B	—
1	VHF Navigation Receiving Equipment	ARC Type 15C, 15D, 15E, or 15F	For substitution and overall tests

4-3. PREVENTIVE MAINTENANCE.

The gears and bearings of the tuner and drive assemblies in the R-34A should be lubricated every 500 hours in accordance with information given in Figure 4-1. The gears and bearings of the channel selector switches in the C-81A or any similar control unit should be lubricated every 500 hours in accordance with information given in Figure 4-2.



SIDE VIEW OF A
TYPICAL DRUM ASSEMBLY

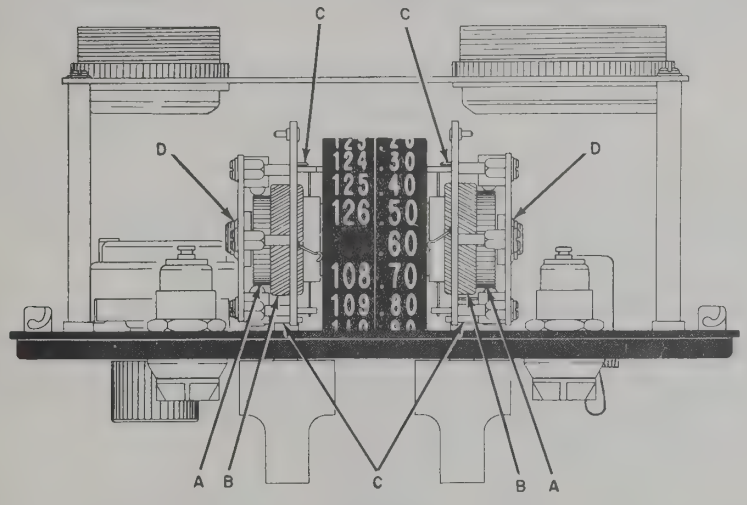


TOP VIEW

Point of Lubrication	Part to be Lubricated	Lubrication Period	Kind of Lubricant	Method of Application
A	Indexing Plate Notches and Ratchet Teeth	500 hours	Aeroshell No. 7 Grease	Use a sharp-pointed tool to apply small amount to several notches and teeth of each tuner.
B	Lever Arm Post Bearing	500 hours	Aeroshell No. 7 Grease	Use a sharp-pointed tool to apply small amount.
C	Switch Plate Contact Surface	500 hours	Dow-Corning DC-510 Silicone Fluid	Apply small amount to several points on the switch plate contact surface of each tuner assembly with artist's brush.
D	Crystal Pins	500 hours	Dow-Corning DC-510 Silicone Fluid	Apply small amount to pins of several crystals in each drum with artist's brush.

TP1635

Figure 4-1. ARC Type R-34A Receiver, Lubrication Points



SIDE VIEW

Caution

Keep oil and grease away from spring contacts and printed circuit contact plates, otherwise intermittent contact may result.

Point of Lubrication	Part to be Lubricated	Lubrication Period	Kind of Lubricant	Method of Application
A	Detent Gear	500 hours	Aeroshell No. 7 Grease	Apply thin coat to gear teeth with artist's brush.
B	Bevel Gear	500 hours	Aeroshell No. 7 Grease	Apply thin coat to gear teeth with artist's brush.
C	Control Shaft Bearing	500 hours	Pioneer No. 10 Oil	Invert unit and apply one drop to each bearing with a sharp-pointed tool.
D	Drum Shaft Bearing	500 hours	Pioneer No. 10 Oil	Apply one drop to each bearing.

TP1637

Figure 4-2. ARC Type C-81A Control Unit, Lubrication Points

A defective receiver part, such as a Zener diode, may cause a loss of audio output or erratic operation of the flag-alarm circuits. If this should occur, turn the receiver off to avoid possible damage to the receiver or power supply.

4-4. REMOVAL AND REPLACEMENT PROCEDURES.

Caution

To prevent damaging any of the miniature parts, handle the receiver by its external framework.

Removal of R-f/I-f and I-f/A-f Assemblies.

Step 1. Release the four snapslides on the power supply and remove it from the R-34A chassis.

Step 2. Remove the two black oxidized screws from each side of the dust cover. Slide the cover back to clear the front panel, then lift it up and off.

Step 3. Remove the bottom plate by removing the eight black oxidized screws.

Step 4. Disconnect the 21-pin connector and the adjacent coaxial cable connector from the i-f/a-f chassis.

Step 5. Remove the three black oxidized screws attaching the r-f/i-f assembly to the top and side of the power chassis section of the i-f/a-f assembly.

Step 6. Unscrew the two black oxidized screws from the top bearing plate and the two black oxidized screws from the bottom of the r-f/i-f assembly to release the assembly and the front panel.

Step 7. To remove the i-f/a-f assembly, pull it straight back and out.

Step 8. For access to components in the r-f/i-f assembly, remove the side plate by taking out eleven screws.

Replacement of Parts on Printed Circuit Boards. The parts of the i-f/a-f circuits are mounted on two printed circuit boards located in the i-f/a-f assembly, accessible after removal of the assembly. Parts on the smaller board are made accessible by removing two screws at each end of the capacitor mounting bracket, unsoldering the grounding wire from A2C8, and pushing the mounting bracket aside. The leads of parts being replaced should be cut off close to the board, and then pulled out of the opposite side as the solder is melted. An attempt to pull a part out by its body may damage the board because of the crimped leads on the parts. A light, pencil iron should be used, held in contact with the board no longer than necessary. After parts are replaced and the board has cooled, Dow Corning No. 991 Silicone Varnish should be brushed over the joint to make the surface moisture-repellent.

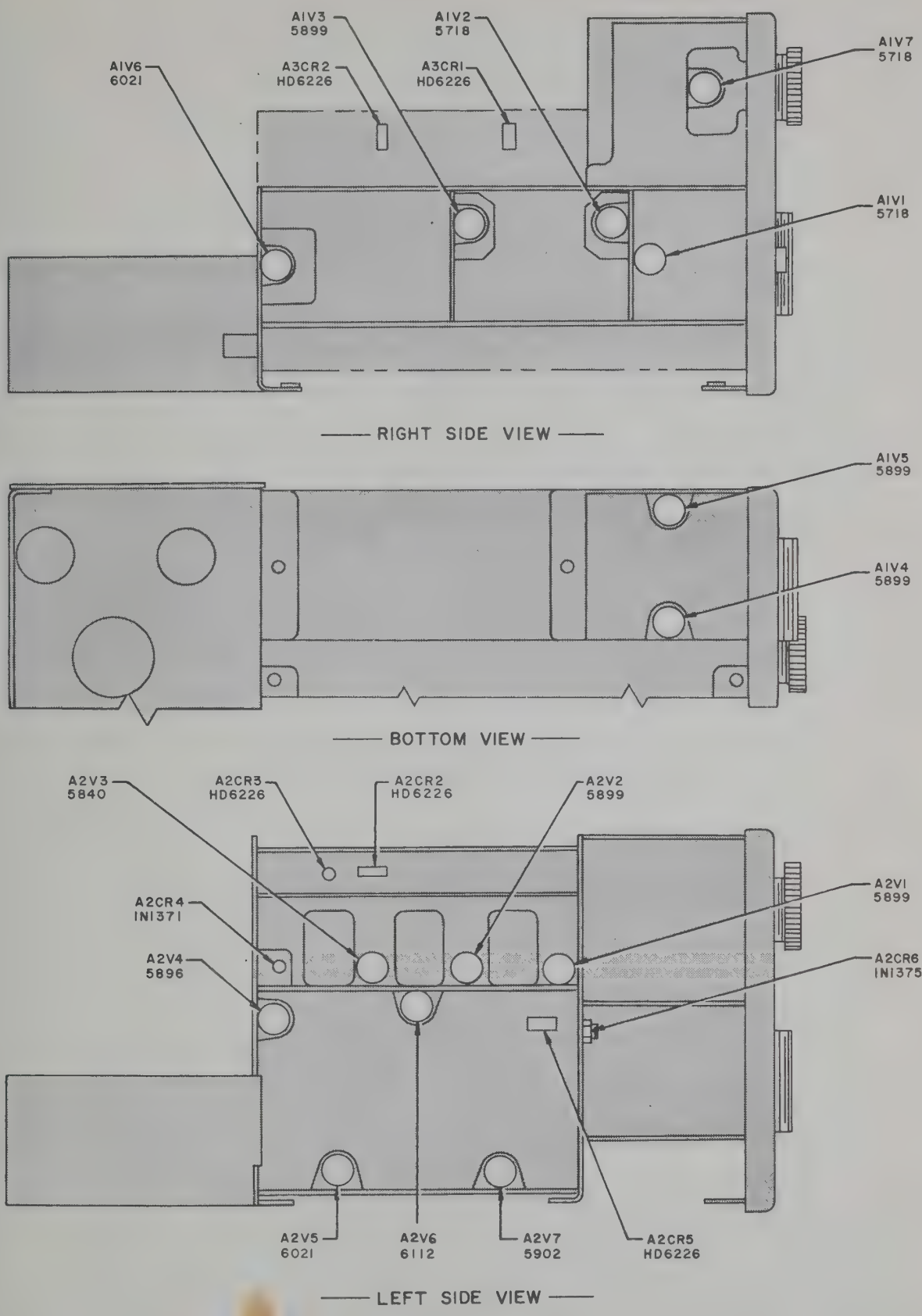
Replacement of Electron Tubes. All electron tubes in the R-34A Receiver are subminiature types. The flexible leads of these tubes are soldered directly to terminal points. Figure 4-3 locates and identifies each of the tubes. All tubes are accessible after removal of the dust cover, and the side and bottom plates. If a tube is replaced, the new tube should be oriented and its leads routed as nearly as possible like the original installation. Do not precut the tube leads before installation. Keep the spacing between leads at least 1/16 inch, and use a minimum amount of solder.

Caution

If A1V1, A1V2, A1V6, or A2V4 is replaced, the receiver may require realignment.

Replacement of Semiconductors. The R-34A Receiver contains seven semiconductor diodes which are located and identified in Figure 4-3. A2CR2, A2CR3, A2CR5, A3CR1, and A3CR2 are soldered in position and are accessible after removal of the dust cover. If replacement is required, the new diode must be oriented correctly and its leads routed as nearly as possible like the original installation. When soldering a diode, hold the lead with pliers between the diode body and the soldering point. The pliers form a heat sink and prevent excessive heat from damaging the diode. Do not remove the pliers until the heat from the soldered joint has been dissipated.

Replacement of Zener diodes A2CR4 and A2CR6 requires the removal of the r-f/i-f and the i-f/a-f assemblies, as described previously.



TP1639

Figure 4-3. ARC Type R-34A Receiver, Tube and Diode Location Diagram

To replace A2CR4, proceed as follows:

Step 1. Unsolder the bus wire from the positive terminal of the diode.

Step 2. Remove the two screws holding the heat-sink block, and remove the diode and the flat washer.

Step 3. When installing the new diode, place the flat washer on the shaft, screw it firmly into the heat-sink block, place the block in position, tighten the two screws, and resolder the bus wire to the positive terminal of the diode.

To replace A2CR6, proceed as follows:

Step 1. Unsolder the two violet wires from the positive terminal of A2CR6.

Step 2. Hold the hexagonal shoulder of the diode body with pliers to prevent it from turning, remove the nut and washers, and remove the diode.

Step 3. When installing the new diode, place the large solder lug under the diode, replace the flat washer and lockwasher on the stud, and tighten the nut, holding the hexagonal shoulder to prevent turning.

Step 4. Resolder the two violet wires.

Replacement of Crystals.

Step 1. Remove the dust cover.

Step 2. Loosen the two captive screws holding the gearing assembly to the main center plate. Remove the gearing assembly by pulling straight up.

Step 3. Remove the captive screw located at each corner of the tuner assembly and the stud and spring washer located at the center of the long side of the tuner assembly.

Step 4. Carefully lift the tuner assembly away from the main center plate until it clears the three mounting posts. Then move the assembly away from the receiver and disconnect P2, P3, and P4. Place the tuner assembly aside.

Step 5. Remove the crystal clamping plate by removing the four screws which attach it.

Step 6. Using tweezers or small, long-nose pliers, remove the desired crystal.

Step 7. Check the replacement crystal for correct frequency, and for straight and parallel pins. Install the replacement crystal.

Step 8. Replace the crystal clamping plate, check that each crystal is positioned correctly under its segment of the plate (with the screw holes aligned), and secure the plate with the four screws.

Step 9. Replace the tuner assembly over the mounting posts, connect P2, P3, and P4, and lower the tuner assembly onto the mounting, setting the indexing tab on each tuner switch plate into the indexing notch on each crystal drum.

Caution

Failure to index the crystal drums properly with the indexing tabs will cause improper operation.

Step 10. Secure the tuner assembly with the four captive screws and replace the stud and spring washer.

Step 11. Rotate the cam on the gearing assembly until its major axis lies along the length of the assembly. Lock the latching pins and latches. Push the gearing assembly into position and tighten the captive screws. Check that each latching spring is properly placed under the lip of the relay armature.

Replacement of Control Unit Parts. The ARC Type C-81A and Type C-88A Control Units use either two type 327 (28-volt) or two type 330 (14-volt) flange-base midget panel lamps. To replace any one of these lamps, proceed as follows:

Step 1. Unscrew the lamp housing, and remove it with the black rubber light shade and lamp.

Step 2. Insert the thin edge of a knife blade, or the fingernails, between the flange base of the lamp and the threaded bushing and withdraw the lamp.

Step 3. Insert a new lamp, seating the flange of the base firmly against the threaded bushing.

Step 4. Replace the lamp housing and screw it back finger tight.

All control unit parts, except the channel selector switches, may be replaced easily. Return defective channel selector switches to the factory for repair.

Caution

Excessive soldering iron heat applied to the terminals on the printed circuit plates of the channel selector switch will affect the position and pressure of the contact springs.

4-5. ADJUSTMENT AND ALIGNMENT PROCEDURES.

Tuner Assembly Adjustments. Normally, no adjustment of the tuner assembly should be necessary; however, if it is definitely determined that readjustment is required, proceed as follows:

Step 1. To adjust the latching relay position, rotate the drive cam to maximum throw position (see Figure 4-4). Remove the two screws holding each guard in place. Adjust the relay mounting screws and relay locking setscrews so that the latch overlaps the latching pin by at least 0.020 inch and clears the pin by at least 0.015 inch with the relay unenergized. When the relay is energized, the latch must disengage the latching pin by at least 0.015 inch clearance on the back stroke.

Step 2. To adjust the driving stroke, loosen the drive pawl pivot screw and adjust the pawl position in the slotted end of the drive-pawl lever so that, with the relay energized, the indexing pin drops into the slot in the index plate near maximum cam throw in all positions. When the drive cam is in minimum throw position, the drive pawl must retract sufficiently to engage the following ratchet tooth of the drive ratchet plate in all positions.

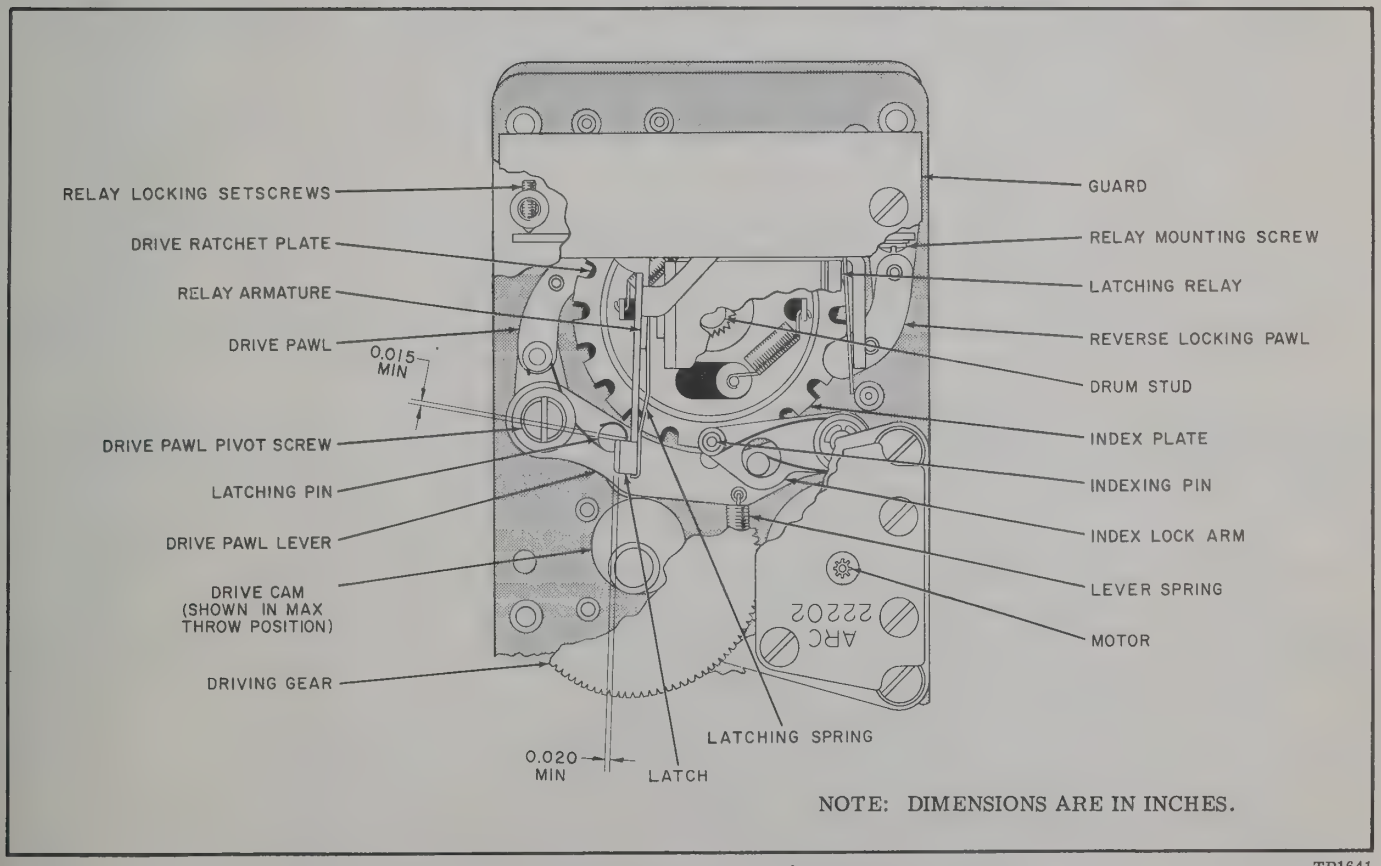


Figure 4-4. Tuner Assembly Parts and Adjustments

Tracking Adjustments. Normally, no adjustment of the r-f and i-f tracking circuits will be necessary; however, if mechanical parts in the tuning linkage have been changed, their alignment should be checked before proceeding with electrical tests. Note that the crystal drums turn in one direction only due to the pawl action. The megacycle crystal drum and associated cams start at 108 mc, ascend in frequency in even-megacycle steps to 126 mc, pass through the blank position to 125 mc, then descend in frequency in odd-megacycle steps to 109 mc, completing the cycle.

Step 1. Set the receiver megacycle crystal drum on the blank space between 126 and 125 mc. The hole located on the maximum radius of the heart-shaped cam should be directly over the shaft of A1C28. If the hole is not properly aligned, loosen the No. 4 splined-drive setscrew that attaches the drum to the cam and rotate the cam into proper alignment. The screw is accessible through a hole in the crystal drum at the blank space, and the screw should be tightened after alignment.

Step 2. Check the operation of the audio level switch, A1S2, located near the megacycle crystal drum. (A1R30 is mounted on the terminals of the audio level switch.) As the crystal drum is rotated, the associated cam should actuate the switch at 118 mc, keep it actuated at all frequencies above 118 mc, and then release the switch at all frequencies below 118 mc.

Step 3. If the audio level switch does not operate properly, loosen both screws on the mounting bracket. Push the switch operating lever away from the cam, and lightly tighten the mounting screw farthest away from the actuating button.

Step 4. Index the megacycle drum to 118 mc. Slowly pivot the switch around the tightened mounting screw until the switch is actuated. Rotate the switch a little further toward the cam and tighten both screws.

Step 5. Recheck the switch operation between 118 and 126 mc.

Step 6. Check the operation of the localizer switch, A1S1, located opposite A1S2. As the crystal drum is rotated, the associated cam should actuate the switch at 111 mc, keep it actuated at all frequencies below 111 mc, and then release the switch at all frequencies above 111.9 mc.

Step 7. If the localizer switch does not operate properly, a procedure similar to that outlined in Steps 3 through 5 for the audio level switch should be followed, except that the frequencies involved are 111 and 112 mc.

Step 8. Check alignment of the fractional megacycle crystal drum gear and its driven gear. Remove the button plug under the front panel SQUELCH control on the receiver. Turn the crystal drum until the two setscrews located at right angles to each other in the driven gear hub are accessible (one through the front panel access hole and the other through a cut-out in the right side of assembly A1).

Step 9. The crystal drum should now be in the .00-mc position. If not, loosen the tuner assembly and the two setscrews and unmesh the gears.

Step 10. Turn the crystal drum to .00 mc, remesh the gears, and tighten the tuner assembly. Turn the slotted driven-gear shaft until maximum coil slug penetration is reached and the shaft slot is parallel to the receiver front panel. Tighten the two setscrews.

Step 11. Check that the plunger setscrew is positioned in the center of the plunger shaft undercut. The plunger arm setscrew is accessible through a hole in the top plate if adjustment is required.

Variable I-f Filter Alignment. The variable i-f filter must be aligned completely if A1L5 or A1L6 (see Figure 4-5) is replaced. The only adjustment normally required is adjustment of trimmers A1C15 and A1C21 (refer to Step 5 of this procedure). No realignment of the i-f filters should be made, even after replacement of A1V3 or A1V4, unless overall gain is unsatisfactory and no other cause can be determined.

Step 1. Connect the d-c probe of the Hewlett-Packard Model 410B Voltmeter to the junction of A2R22 and A2R26, and the ground lead to the chassis. Set the vtvm range at -10 volts dc full scale.

Step 2. Connect the Measurements Model 65-B Signal Generator through a 0.01-μf capacitor to pin 1 of A1V4.

Step 3. Set the control unit fractional megacycle channel selector switch to .00 mc. Tune the signal generator for a peak reading on the voltmeter at 11.7 mc, and mark the signal generator dial.

Step 4. Set the control unit fractional megacycle channel selector switch to .90 mc Tune the signal generator for a peak reading on the voltmeter at 12.6 mc, and mark the signal generator dial.

Note

In the following steps, when tuning of the signal generator is required at 11.7 and 12.6 mc, use the calibration marks on the signal generator dial to set frequency. Maintain the voltmeter reading below -4 volts to avoid agc action.

Step 5. Remove the receiver side plate. Connect the signal generator output through 0.01-μf capacitor to pin 1 of A1V3. Set the control unit fractional megacycle channel selector switch to .00 and tune the signal generator to 11.7 mc. Adjust trimmers A1C15 and A1C21, located on the top bearing plate, for maximum voltmeter reading.

Step 6. Set the control unit fractional megacycle channel selector switch to .90 mc and tune the signal generator to 12.6 mc. Adjust slug-tuned inductors A1L5 and A1L6 by rotating each inductor slug inwards or outwards, using a small capstan wrench or lever, for a maximum reading on the voltmeter.

Step 7. Repeat Steps 5 and 6 until further adjustment of inductor slugs produces negligible improvement in output, as indicated on the voltmeter. The inductance adjustment should always be the final adjustment.

Megacycle Oscillator-Doubler Alignment.

Step 1. Set the control unit megacycle channel selector switch to 126 mc. Connect the r-f probe of the Hewlett-Packard Model 410B Voltmeter between ground and the junction of pins 2 and 8 of A1V3, accessible through a large hole provided in the side plate. Set the voltmeter range at 3 volts ac full scale.

Step 2. Loosen the setscrew in the tuning arm of A1C28 with a No. 4 spline wrench and rotate the shaft by means of the screwdriver slot so that the capacitor blades are approximately seven-eighths of the way open, and so that additional counterclockwise shaft rotation will reduce the meshed area further. Tighten the setscrew.

Step 3. If necessary, separate the r-f/i-f and i-f/a-f assemblies (refer to paragraph 4-4). Adjust trimmer capacitor A1C29, accessible through a hole in the rear panel of the r-f/i-f assembly, for a maximum voltmeter reading.

Step 4. Use the tuning wand to check doubler coil A1L10 for a peak voltmeter reading. If placing the iron tip near the coil increases the reading, move the turns of A1L10 closer together to obtain a peak reading. If placing the brass tip near the coil increases the reading, spread the turns of A1L10 to obtain a peak reading.

Step 5. Set the control unit megacycle channel selector switch to 108 mc. Check A1L10 with the tuning wand for a peak reading. If necessary, turn the A1C28 tuning arm adjustment screw to obtain this peak. Check A1L7 with the tuning wand for a peak reading. Adjust coil turn spacing if necessary.

Step 6. Repeat Steps 3, 4, and 5 until no further improvement in output occurs.

R-f Alignment. Complete r-f realignment will be necessary only if major components such as tuning capacitors, tuning arms, etc. have been replaced. Replacement of a tube will generally require adjustment only of its input and output tuned circuits. No adjustment of the coils or tuning capacitors should be made unless overall gain is unsatisfactory and no other cause can be determined.

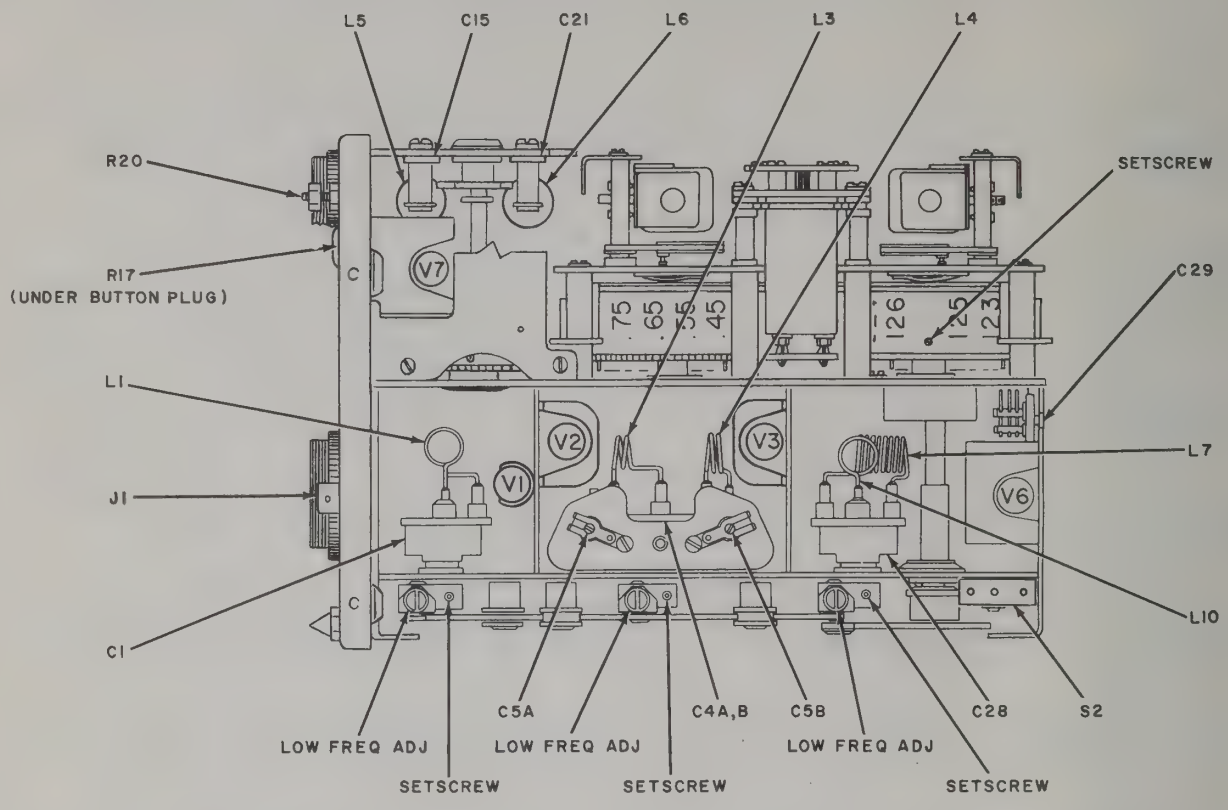
Step 1. Set the channel selector switches on the control unit to 126.50 mc. Remove the ten screws holding the side plate. Use a No. 4 spline wrench to loosen the setscrew in the tuning arm of A1C4 (see Figure 4-5). Adjust the capacitor rotor by means of the screwdriver slot in the end of the capacitor shaft so that the capacitor blades are approximately seven-eighths of the way open, and so that additional counterclockwise shaft rotation will reduce the meshed area further. Tighten the setscrew.

Step 2. Loosen the setscrew in the tuning arm of cascode grid tuning capacitor A1C1 and rotate the shaft so that the capacitor is at approximately minimum capacity. Tighten the setscrew.

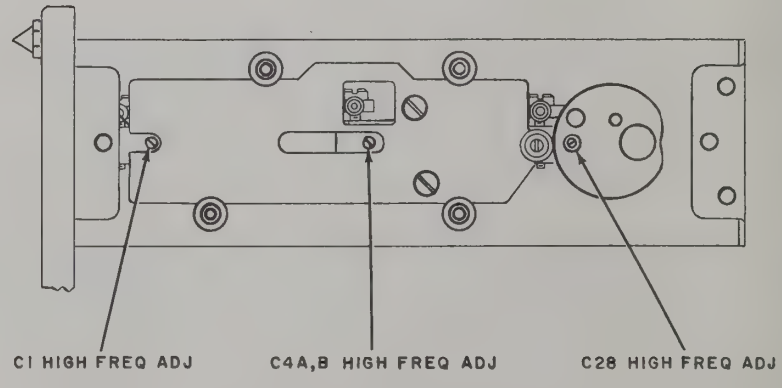
Step 3. Connect the d-c probe of the Hewlett-Packard Model 410B Voltmeter to the junction of A2R22 and A2R26, and the ground lead to the chassis. Set the vtvm range at -10 volts dc full scale.

Step 4. Connect the output of the Boonton Radio Model 211-A Signal Generator through the Boonton Radio Model 505-B 6-db Attenuator to the ANT jack, J1, on the R-34A front panel.

Step 5. Tune the signal generator through 126.50 mc, as indicated by a maximum reading on the voltmeter. At first, a relatively large signal generator output voltage may be required to get a tuning indication. Adjust trimmer capacitors A1C5A and A1C5B with a low-capacity alignment tool for a peak voltmeter reading.



RIGHT SIDE VIEW



BOTTOM VIEW

NOTE: TO COMPLETE REFERENCE DESIGNATION, PREFIX SYMBOL WITH A1; FOR EXAMPLE: A1C29.

TP1643

Figure 4-5. R-f/I-f Assembly A1, Adjustment Points

Note

When making final alignment adjustments, always adjust the signal generator output to maintain a reading of -4 volts or less on the voltmeter.

Step 6. Temporarily connect a 20-$\mu\mu$f capacitor from the stator of trimmer capacitor A1C5B to ground and, with the signal generator still tuned to 126.50 mc, readjust trimmer capacitor A1C5A for a peak reading on the voltmeter. Check antenna coil A1L1 with the tuning wand for optimum peaking. If adjustment is required, loosen the setscrew in the tuning arm of A1C1 and adjust the capacitor rotor as required to obtain a maximum reading.

Step 7. Set the control unit channel selector switches to 108.50 mc, and tune the signal generator for a maximum voltmeter reading at 108.50 mc. Use the tuning wand to check plate coil A1L3 for optimum tuning. If adjustment is required, carefully change the turn spacing of A1L3 to obtain maximum output. Check A1L1 with the tuning wand for optimum peaking. If adjustment is required, tune A1C1 by means of its tuning arm adjustment screw.

Step 8. Repeat the procedure of Steps 6 and 7 until optimum peaking of A1C5A and A1L3 is obtained.

Step 9. Set the control unit channel selector switches to 126.50 mc. Remove the 20-$\mu\mu$f capacitor connected in Step 6, turn the power off, and connect the capacitor from the stator of A1C5A to ground. Turn the power on, and peak the signal generator at 126.50 mc, as before, then adjust A1C5B for a peak voltmeter reading.

Step 10. Set the control unit channel selector switches to 108.50 mc. Tune the signal generator for a peak reading at 108.50 mc and check A1L4 with the tuning wand for a maximum voltmeter reading. If adjustment is required, tune A1C4 by means of its tuning arm adjustment screw. Turn the equipment off and remove the 20-$\mu\mu$f capacitor connected in Step 9.

Step 11. Replace the receiver side plate. Set the control unit channel selector switches to 126.50 mc and tune the signal generator for a maximum reading at 126.50 mc. Adjust A1C5B through the access hole in the side plate for peak output.

Receiver Navigation Output Level.

Step 1. Connect the Ballantine Model 300 Voltmeter to pin 5 of A2J4. Set the control unit channel selector switches and the ARC Type H-14A Signal Generator to 110.90 mc, with the H-14A MODULATION switch on 30 cps at 30 per cent modulation, and 100 μv output through the 6-db attenuator to the ANT jack of the R-34A.

Step 2. The voltmeter should read between 1.8 and 2.1 volts. If necessary, change the value of A2R45 (connected to one end of A2R15) to obtain the correct voltage. The resistor used should be between 50K and 470K ohms.

Step 3. Check the output at 30 per cent modulation using 90, 150, and 9960 cps modulation. The output should vary not more than ±1.5 db from the 30-cps value, as read on the Ballantine Model 300 Voltmeter.

Receiver Phase Shift. The 30-cps phase shift of the receiver has been accurately determined and adjusted at the factory to be 192° overall, so that it may be used with any B-13, B-13A, or B-13A-1 Converter. Replacement of C16, C17, C18, C19, R13, R14, R44, T3, or V4 in the i-f/a-f assembly, A2, may change the phase shift, which should be readjusted at the factory.

If the receiver cannot be returned to the factory, an overall check of its course accuracy may be performed by using the H-14A Signal Generator and a VOR equipment.

Step 1. If A2R44 has been changed for any reason, install a 200K-ohm resistor in its position. Connect the H-14A through the 6-db attenuator to the R-34A ANT jack. Set the H-14A MC switch to B (114.9 mc). Set the OMNI TRACK switch to 0°. Set the H-14A ATTENUATOR to 100 μv.

Step 2. Set the IN-10 course selector to exactly 0°. If the vertical cross-pointer needle is deflected completely out of the 3/16-inch diameter black circle, adjust the value of A2R44 to bring the needle to an on-course indication. The resistor used should be between 50K and 470K ohms. If the needle is off-course but still inside the black circle, converter adjustment R225 may be turned for an on-course indication.

Step 3. Slowly increase the H-14A ATTENUATOR setting to 10,000 μv, then decrease it to 10 μv. The cross-pointer needle should not leave the black circle. Any erratic reading may be due to defective

electrolytic capacitor A2C9, A2C15, or A2C34, which should be replaced with a capacitor having a minimum of the rated capacitance value. If diode A2CR2 is defective, an erratic reading may also result.

4-6. MEASUREMENTS.

Typical voltage and resistance measurements for the R-34A are given in Figure 4-6. Typical stage gain measurements are listed in Table 4-2.

TABLE 4-2. R-34A STAGE GAIN MEASUREMENTS

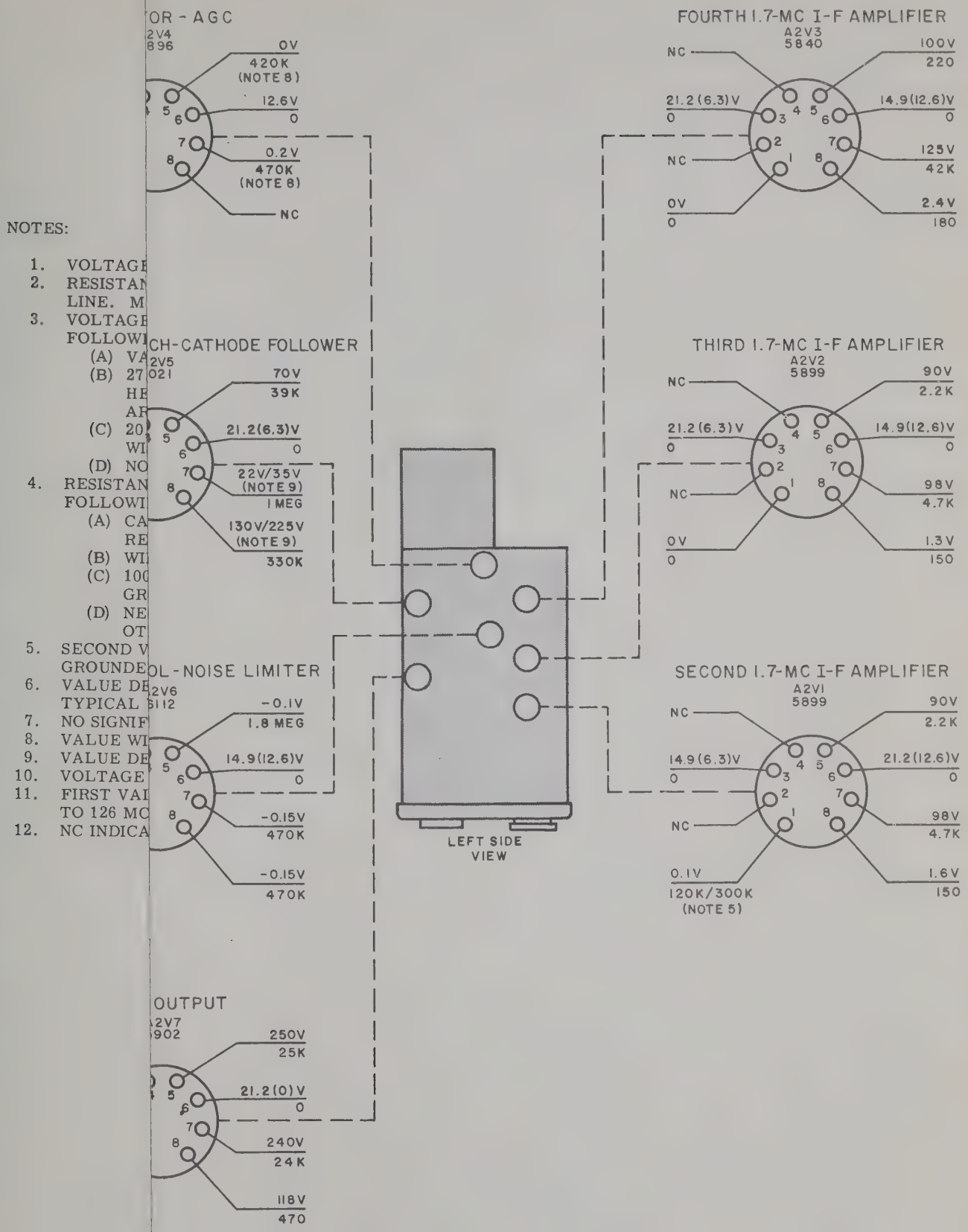
Conditions:

1. Channel selector switches set to 126.00 mc.
2. Channel selector switches set to 108.00 mc.
3. The 1.7-mc and 11.7-mc signals are supplied by Measurements Model 65-B Signal Generator, or equivalent, terminated with Boonton Radio Model 505-B 6-db Attenuator. Output of attenuator is direct-coupled between input point and chassis ground.
4. Input shown for r-f and i-f signals is the signal level required to obtain -5.0 volts dc between the junction of A2R22 and A2R26 and chassis ground. Hewlett-Packard Model 410B Voltmeter, or equivalent, used for measurements.
5. The 108.00-mc and 126.00-mc r-f signals are supplied by Boonton Radio Type 211-A Signal Generator, or equivalent, terminated with Boonton Radio Model 505-B 6-db Attenuator. Output of attenuator is direct-coupled between input point and chassis ground.
6. I-f sensitivity control, R17, on receiver's front panel set to approximately 85 per cent of maximum clockwise rotation.
7. Receiver SQUELCH circuit disabled for all tests.
8. R-f and i-f input levels, except input to J1 ANT, may vary between half and twice the nominal value listed.
9. Audio voltages measured with Ballantine Model 300 Voltmeter, or equivalent. Readings may vary 20 per cent.
10. Audio voltages are taken with 100 microvolts input to J1 ANT, 1000-cycle modulation, C-81A VOL control at maximum clockwise position, and TEL line terminated in 300 ohms. All readings are in rms volts. Audio gain may also be checked by applying 1000 cycles from an audio oscillator to junction of A2R22 and A2R26.

Tube	Signal Input		Conditions
	Pin No.	μV	
1.7-MC I-F MEASUREMENTS			
A2V3 (fourth i-f)	1	400,000	3, 4, 6, 7, 8
A2V2 (third i-f)	1	22,000	3, 4, 6, 7, 8
A2V1 (second i-f)	1	1400	3, 4, 6, 7, 8
A1V5 (first i-f)	1	160	3, 4, 6, 7, 8
A1V4 (second mixer)	1	18	3, 4, 6, 7, 8
11.7-MC I-F MEASUREMENTS			
A1V4 (second mixer)	1	60	3, 4, 6, 7, 8
A1V3 (first mixer)	1	10	3, 4, 6, 7, 8
126.00-MC R-F MEASUREMENTS			
A1V3 (first mixer)	1	12	1, 4, 5, 6, 7, 8
A1V1, A1V2 (r-f ampl)	J1 ANT	1.1	1, 4, 5, 6, 7

AUDIO MEASUREMENTS

Per Cent Mod	Junction A2R22 & A2R26	Pins 7, 8 A2V6	Pin 5 A2V6	Pin 7 A2V5	Pin 1 A2V7	TEL Output	Conditions
30	2.0	0.82	0.75	0.1	2.5	7	1, 6, 7, 9, 10
85	5.0	2.6	2.0	0.45	7.5	15	1, 6, 7, 9, 10
30	2.0	0.82	0.75	0.1	6.5	14	2, 6, 7, 9, 10



NOTES:

1. VOLTAGE
2. RESISTAN
   LINE. M
3. VOLTAGE
   FOLLOWI
   (A) VA
   (B) 27
   HE
   AP
   (C) 20
   WI
   (D) NO
4. RESISTAN
   FOLLOWI
   (A) CA
   RE
   (B) WI
   (C) 100
   GR
   (D) NE
   OT
5. SECOND V
   GROUNDE
6. VALUE DE
   TYPICAL
7. NO SIGNIF
8. VALUE WI
9. VALUE DE
10. VOLTAGE
11. FIRST VAI
    TO 126 MC
12. NC INDICA

Figure 4-6. ARC Type R-34A Receiver, Voltage and Resistance Measurements

electrolytic capacitor A2C9, A2C15, or A2C34, which should be replaced with a capacitor having a minimum of the rated capacitance value. If diode A2CR2 is defective, an erratic reading may also result.

4-6. MEASUREMENTS.

Typical voltage and resistance measurements for the R-34A are given in Figure 4-6. Typical stage gain measurements are listed in Table 4-2.

TABLE 4-2. R-34A STAGE GAIN MEASUREMENTS

Conditions:

1. Channel selector switches set to 126.00 mc.
2. Channel selector switches set to 108.00 mc.
3. The 1.7-mc and 11.7-mc signals are supplied by Measurements Model 65-B Signal Generator, or equivalent, terminated with Boonton Radio Model 505-B 6-db Attenuator. Output of attenuator is direct-coupled between input point and chassis ground.
4. Input shown for r-f and i-f signals is the signal level required to obtain -5.0 volts dc between the junction of A2R22 and A2R26 and chassis ground. Hewlett-Packard Model 410B Voltmeter, or equivalent, used for measurements.
5. The 108.00-mc and 126.00-mc r-f signals are supplied by Boonton Radio Type 211-A Signal Generator, or equivalent, terminated with Boonton Radio Model 505-B 6-db Attenuator. Output of attenuator is direct-coupled between input point and chassis ground.
6. I-f sensitivity control, R17, on receiver's front panel set to approximately 85 per cent of maximum clockwise rotation.
7. Receiver SQUELCH circuit disabled for all tests.
8. R-f and i-f input levels, except input to J1 ANT, may vary between half and twice the nominal value listed.
9. Audio voltages measured with Ballantine Model 300 Voltmeter, or equivalent. Readings may vary 20 per cent.
10. Audio voltages are taken with 100 microvolts input to J1 ANT, 1000-cycle modulation, C-81A VOL control at maximum clockwise position, and TEL line terminated in 300 ohms. All readings are in rms volts. Audio gain may also be checked by applying 1000 cycles from an audio oscillator to junction of A2R22 and A2R26.

Tube	Signal Input		Conditions
	Pin No.	μV	
1.7-MC I-F MEASUREMENTS			
A2V3 (fourth i-f)	1	400,000	3, 4, 6, 7, 8
A2V2 (third i-f)	1	22,000	3, 4, 6, 7, 8
A2V1 (second i-f)	1	1400	3, 4, 6, 7, 8
A1V5 (first i-f)	1	160	3, 4, 6, 7, 8
A1V4 (second mixer)	1	18	3, 4, 6, 7, 8
11.7-MC I-F MEASUREMENTS			
A1V4 (second mixer)	1	60	3, 4, 6, 7, 8
A1V3 (first mixer)	1	10	3, 4, 6, 7, 8
126.00-MC R-F MEASUREMENTS			
A1V3 (first mixer)	1	12	1, 4, 5, 6, 7, 8
A1V1, A1V2 (r-f ampl)	J1 ANT	1.1	1, 4, 5, 6, 7

AUDIO MEASUREMENTS

Per Cent Mod	Junction A2R22 & A2R26	Pins 7, 8 A2V6	Pin 5 A2V6	Pin 7 A2V5	Pin 1 A2V7	TEL Output	Conditions
30	2.0	0.82	0.75	0.1	2.5	7	1, 6, 7, 9, 10
85	5.0	2.6	2.0	0.45	7.5	15	1, 6, 7, 9, 10
30	2.0	0.82	0.75	0.1	6.5	14	2, 6, 7, 9, 10

NOTES:

1. VOLTAGES ARE DC AND APPEAR ABOVE THE REFERENCE LINE.
2. RESISTANCES ARE IN OHMS AND APPEAR BELOW THE REFERENCE LINE. MULTIPLIERS: K=1,000; MEG=1,000,000.
3. VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
   (A) VALUES ARE WITH RESPECT TO CHASSIS GROUND.
   (B) 27.5 VOLTS DC MEASURED AT PIN 6 OF A2J4, EXCEPT HEATER VOLTAGES SHOWN IN PARENTHESES WHICH ARE FOR 14-VOLT MODEL.
   (C) 20,000 OHMS-PER-VOLT VOLTMETER USED UNLESS OTHERWISE NOTED.
   (D) NO R-F SIGNAL INPUT UNLESS OTHERWISE NOTED.
4. RESISTANCE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
   (A) CABLES AND POWER SUPPLY DISCONNECTED FROM RECEIVER.
   (B) WIRED PLUG ARC-11934 IN J2 ON FRONT PANEL.
   (C) 100-VOLT SUPPLY GROUNDED. (CONNECT A1C13 TO GROUND.)
   (D) NEGATIVE TERMINAL OF OHMMETER GROUNDED, UNLESS OTHERWISE NOTED.
5. SECOND VALUE TAKEN WITH POSITIVE TERMINAL OF OHMMETER GROUNDED.
6. VALUE DEPENDS ON SETTING OF I-F SENSITIVITY CONTROL A1R17. TYPICAL V READING—1.5V, TYPICAL R READING—1.5K.
7. NO SIGNIFICANT MEASUREMENT CAN BE MADE.
8. VALUE WILL DIFFER IF A2R44 IS OTHER THAN 200K OHMS.
9. VALUE DEPENDS ON SETTING OF SQUELCH CONTROL A1R20.
10. VOLTAGE IS -0.5 VOLT WITH R-F SIGNAL OVER 5 μV.
11. FIRST VALUE TAKEN FROM 108 TO 117 MC; SECOND FROM 118 TO 126 MC.
12. NC INDICATES NO CONNECTION.

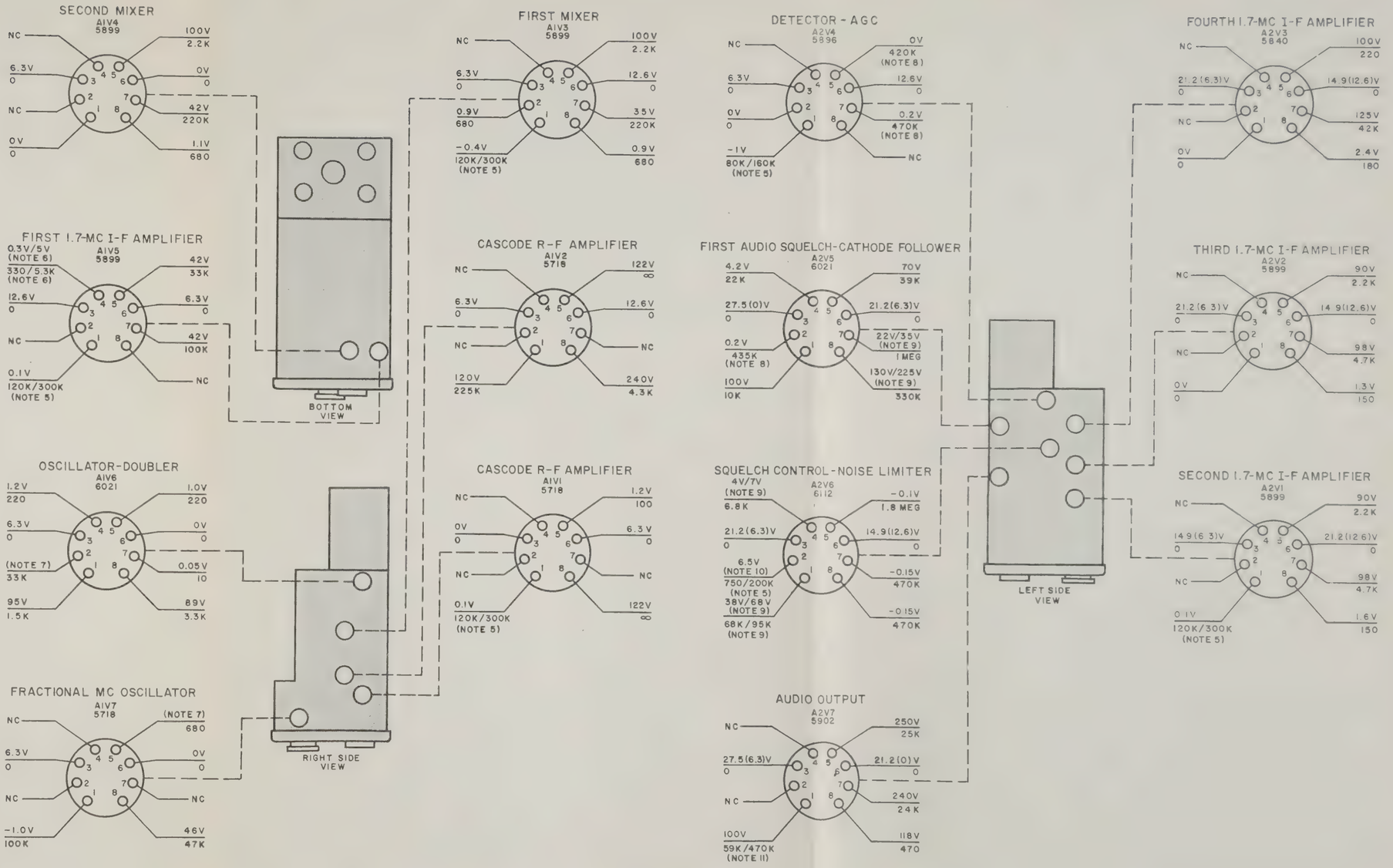


Figure 4-6. ARC Type R-34A Receiver, Voltage and Resistance Measurements

SECTION V

DIAGRAMS

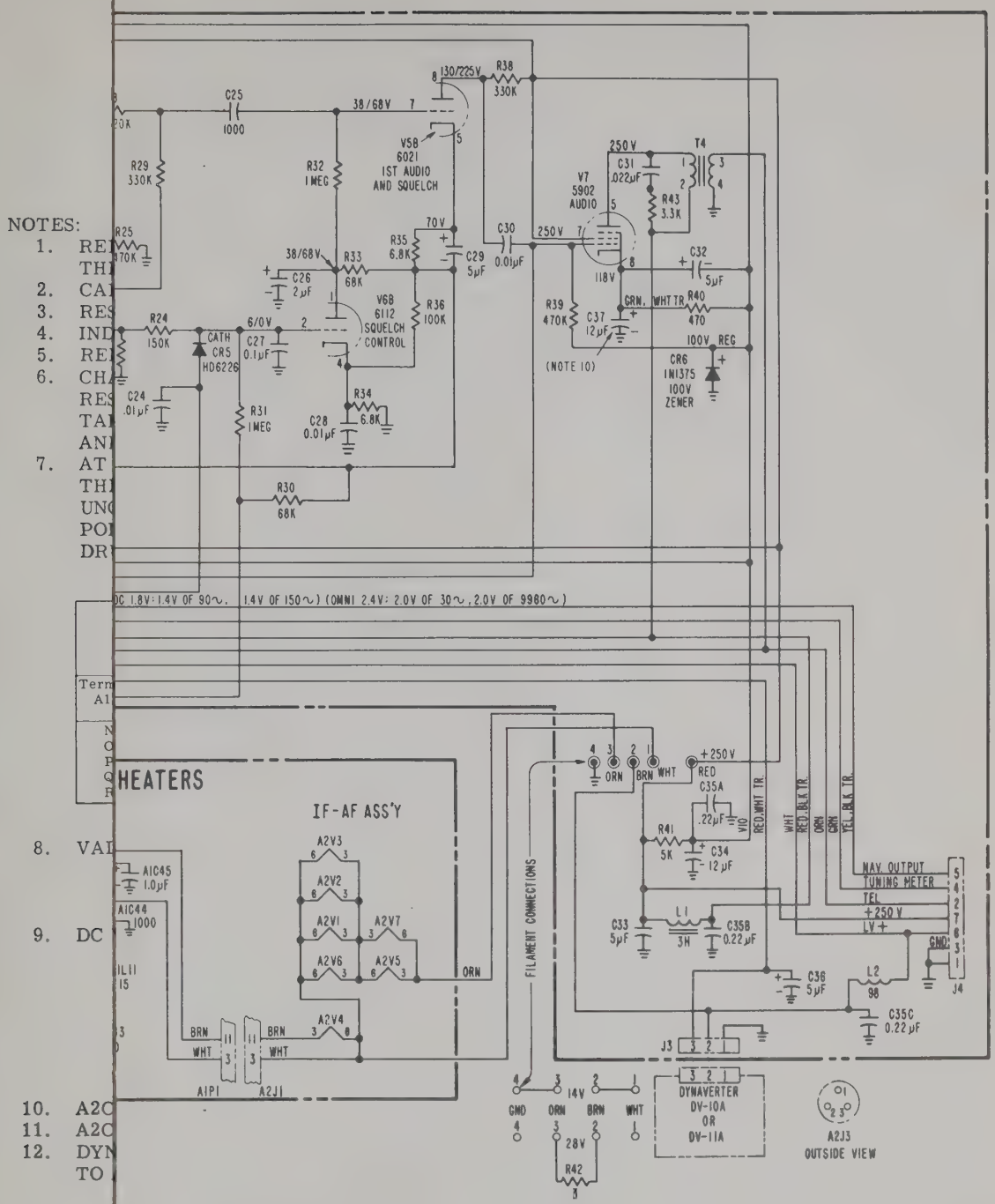


Figure 5-1. ARC Type R-34A Receiver, Schematic Diagram

NOTES:

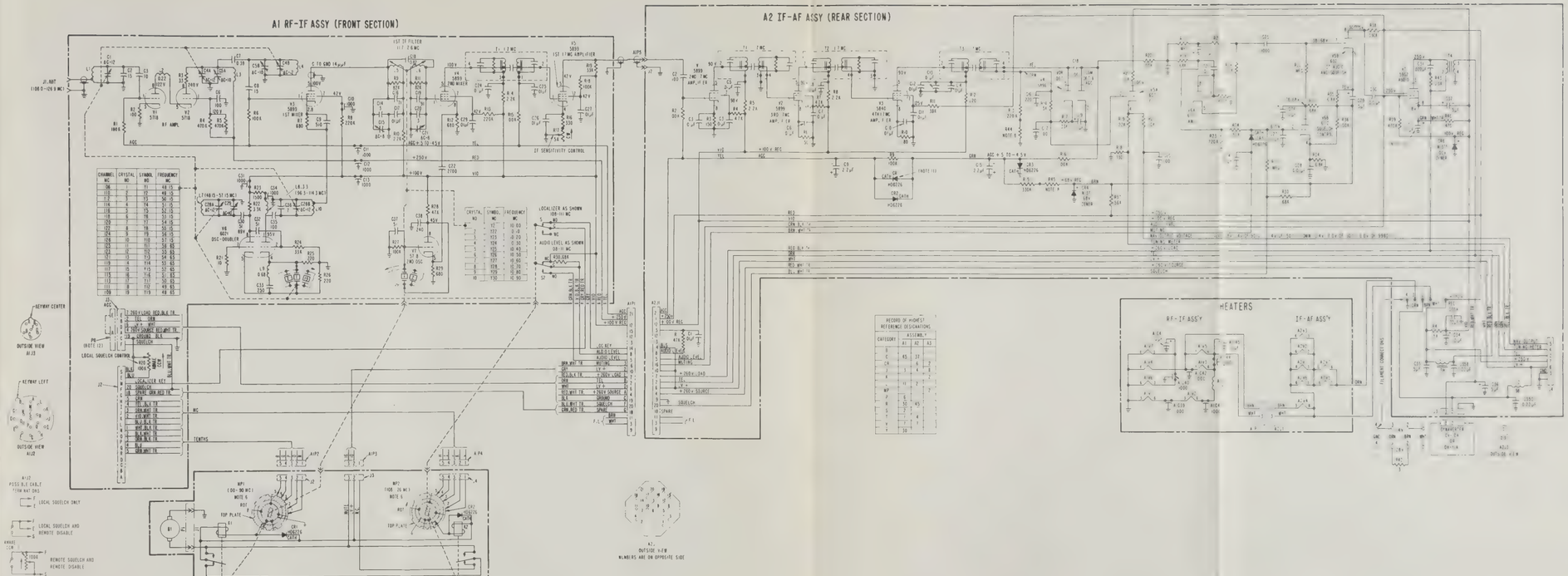
1. REFERENCE DESIGNATIONS ARE ABBREVIATED. FOR COMPLETE IDENTIFICATION, PREFIX THE PART DESIGNATION WITH THE ASSEMBLY DESIGNATION.
2. CAPACITANCE VALUES ARE IN MICROMICROFARADS (μμF) UNLESS OTHERWISE NOTED.
3. RESISTANCE VALUES ARE IN OHMS. MULTIPLIERS: K=1000; MEG=1,000,000.
4. INDUCTANCE VALUES ARE IN MICROHENRIES (μH) UNLESS OTHERWISE NOTED.
5. RELAYS ARE SHOWN IN UNENERGIZED POSITION.
7. CHANNEL CODERS A3MP1 AND A3MP2 ARE SHOWN IN THE .00-MC AND 108-MC POSITIONS, RESPECTIVELY (VIEWED FROM TOP OF RECEIVER). FOR POSITION-CONTROL CIRCUITS, REFER TO TABLE IN NOTE 7. THERE ARE TEN UNUSED POSITIONS ON THE FRACTIONAL MEGACYCLE DRUM AND ONE UNUSED POSITION ON THE MEGACYCLE DRUM.
7. AT A SELECTED CRYSTAL DRUM POSITION, CONTINUITY SHOULD EXIST BETWEEN ANY ONE OF THE FRACTIONAL MEGACYCLE OR MEGACYCLE TEST POINTS LISTED AND GROUND ("G") OR UNGROUNDED POINT ("H") AS LISTED. CONTINUITY SHOULD ALSO EXIST BETWEEN AN "H" POINT AND OTHER "H" POINTS LISTED VERTICALLY, AND TO THE ASSOCIATED CRYSTAL-DRUM-POSITION RELAY, A3K1 OR A3K2.

Fract. Megacycle Test Points			Crystal Drum Position																			Megacycle Test Points		
			.00	.10	.20	.30	.40	.50	.60	.70	.80	.90												
			108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126			
Term. of A1J2	Cont. of A3MP1	Wires of A1J2	Indication																			Term. of A1J2	Cont. of A3MP2	Wires of A1J2
M	1	WHT, BLK TR	G	G	G	H	H	H	G	H	H	G	H	H	H	H	H	G	H	G	G	L	1	BLU, BLK TR
O	2	BLK, WHT TR	G	G	H	G	H	H	G	H	H	G	H	H	H	H	H	G	G	H	G	K	2	YEO, WHT TR
P	3	ORN, BLK TR	H	G	H	G	H	G	G	H	H	H	G	H	H	H	G	G	H	G	H	J	3	ORN, WHT TR
Q	4	BLU	H	H	H	G	G	G	H	G	H	H	H	G	H	G	G	G	H	H	H	L	4	YEL, BLK TR
R	5	GRN, WHT TR	H	H	G	H	H	G	H	G	H	G	G	H	G	G	H	H	H	H	G	H	5	GRN

6. VALUES OF FOLLOWING PARTS ARE SELECTED AND INSTALLED AT TIME OF FINAL ADJUSTMENT:

REF DES	VALUE	FUNCTION
A2R44	50K TO 470K	DETERMINES PHASE SHIFT AT 30 CPS
A2R45	50K TO 470K	DETERMINES NAV LEVEL TO CONVERTER

9. DC VOLTAGES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
   A. MEASUREMENTS MADE WITH 20,000 OHMS-PER-VOLT VOLTMETER, NEGATIVE TERMINAL GROUNDED TO CHASSIS.
   B. WITH NO R-F SIGNAL APPLIED, VOLTAGES SEPARATED BY A SLANT (/) ARE OBTAINED AT EXTREME SETTINGS OF SQUELCH CONTROL A1R20.
   C. NO INPUT TO CONVERTER. VOLTAGES ARE 5% LOWER WHEN CONVERTER IS OPERATING.
   D. LV+ AT TERMINAL 2 OF A2J3 SET AT 13.75 VOLTS FOR 14-VOLT UNIT, OR 27.5 VOLTS FOR 28-VOLT UNIT.
10. A2C37 IS NOT USED IN SERIAL NO. 117, 115, AND BELOW OF 28-VOLT MODELS.
11. A2CR1 IS USED ONLY IN SERIAL NO. 101 THROUGH 110, 112, 114, AND 117 OF 28-VOLT MODELS.
12. DYNAVERTER MAY BE USED TO SUPPLY 260 VOLTS AT 140 MA TO TRANSMITTER CONNECTED TO A1J3 (NO CURRENT DRAIN BY RECEIVER).

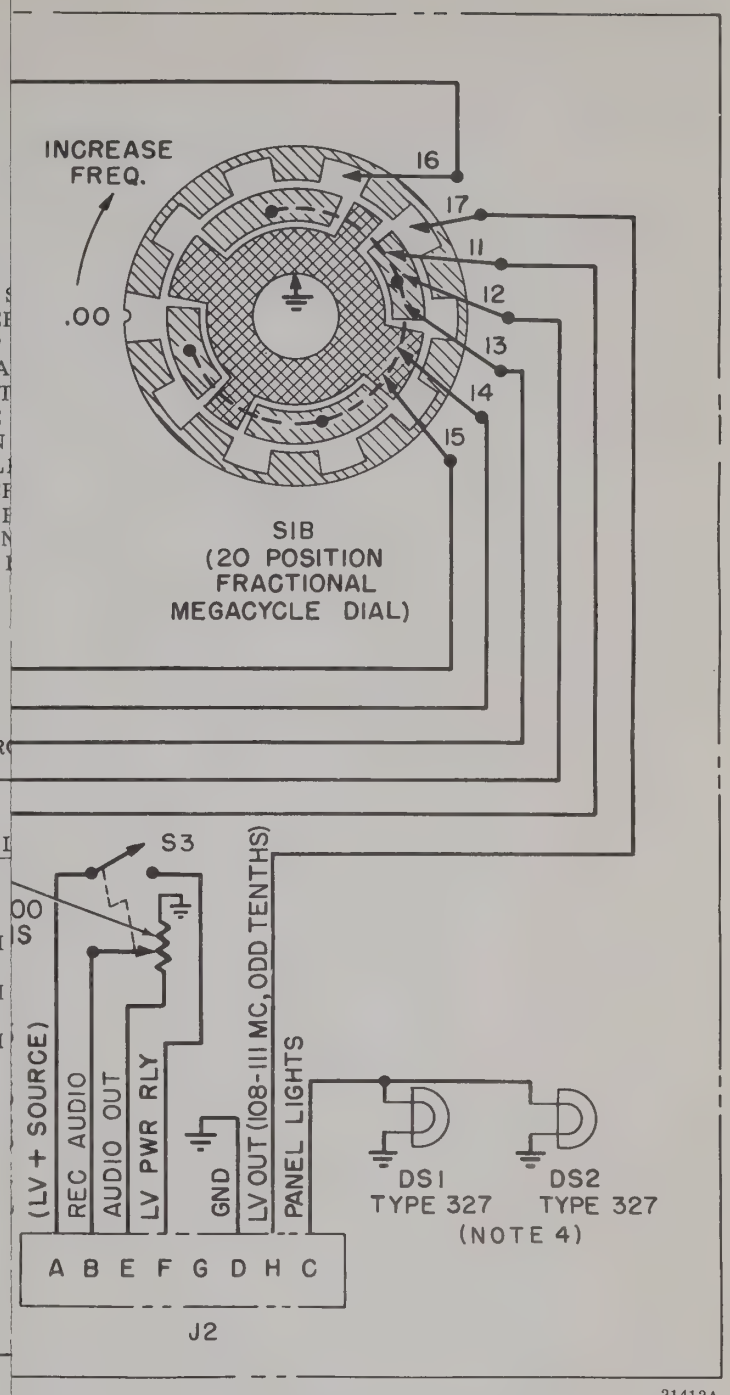


NOTES:

1. SWITCH SECTIONS S
2. S1A CONTROLS TE
   TERMINAL GROUP
   POSITION OF S1A A
   GROUNDED AND OT
   TOGETHER, FREE
3. SHADED AREAS ON
   SURFACE. DOUBL
4. FOR 28-VOLT OPE
   FOR 14-VOLT OPE
5. ON UNITS BEGINNI
   TAPER VARIABLE

TABULATION OF GR

S1A	Group H, I, J, K, L
108	L, K
109	L, K, J
110	L, H
111	L, K, J, I
112	I
113	K, J, I, H
114	J
115	L, J, I, H
116	K
117	K, I, H
118	L
119	L, J, H
120	H
121	K, I
122	I, H
123	J, H
124	J, I
125	L, I
126	K, J
Space	L, K, H



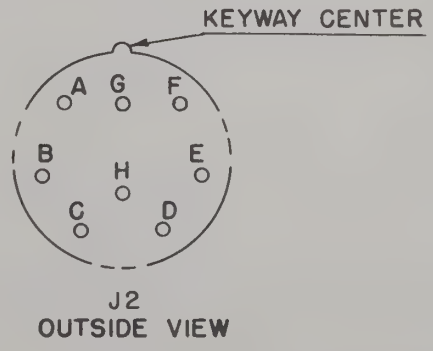
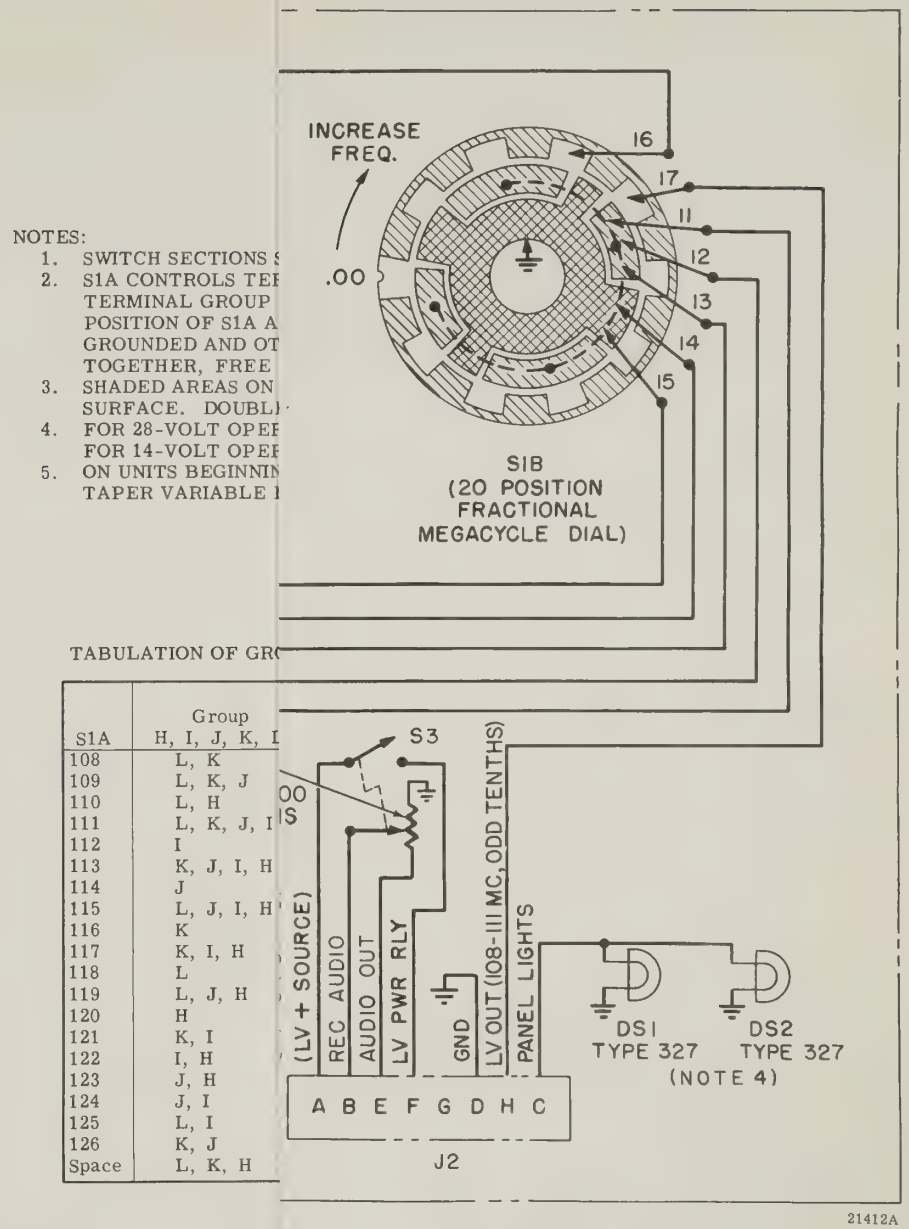


Figure 5-2. ARC Type C-81A Control Unit, Schematic Diagram

NOTES:
1. SWITCH SECTIONS S
2. S1A CONTROLS TEF
TERMINAL GROUP
POSITION OF S1A A
GROUNDED AND OT
TOGETHER, FREE
3. SHADED AREAS ON
SURFACE. DOUBLI
4. FOR 28-VOLT OPEF
FOR 14-VOLT OPEF
5. ON UNITS BEGINNIN
TAPER VARIABLE I

TABULATION OF GR

S1A	Group H, I, J, K, I
108	L, K
109	L, K, J
110	L, H
111	L, K, J, I
112	I
113	K, J, I, H
114	J
115	L, J, I, H
116	K
117	K, I, H
118	L
119	L, J, H
120	H
121	K, I
122	I, H
123	J, H
124	J, I
125	L, I
126	K, J
Space	L, K, H



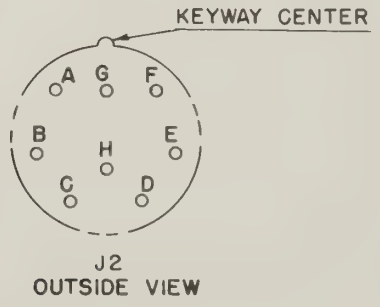


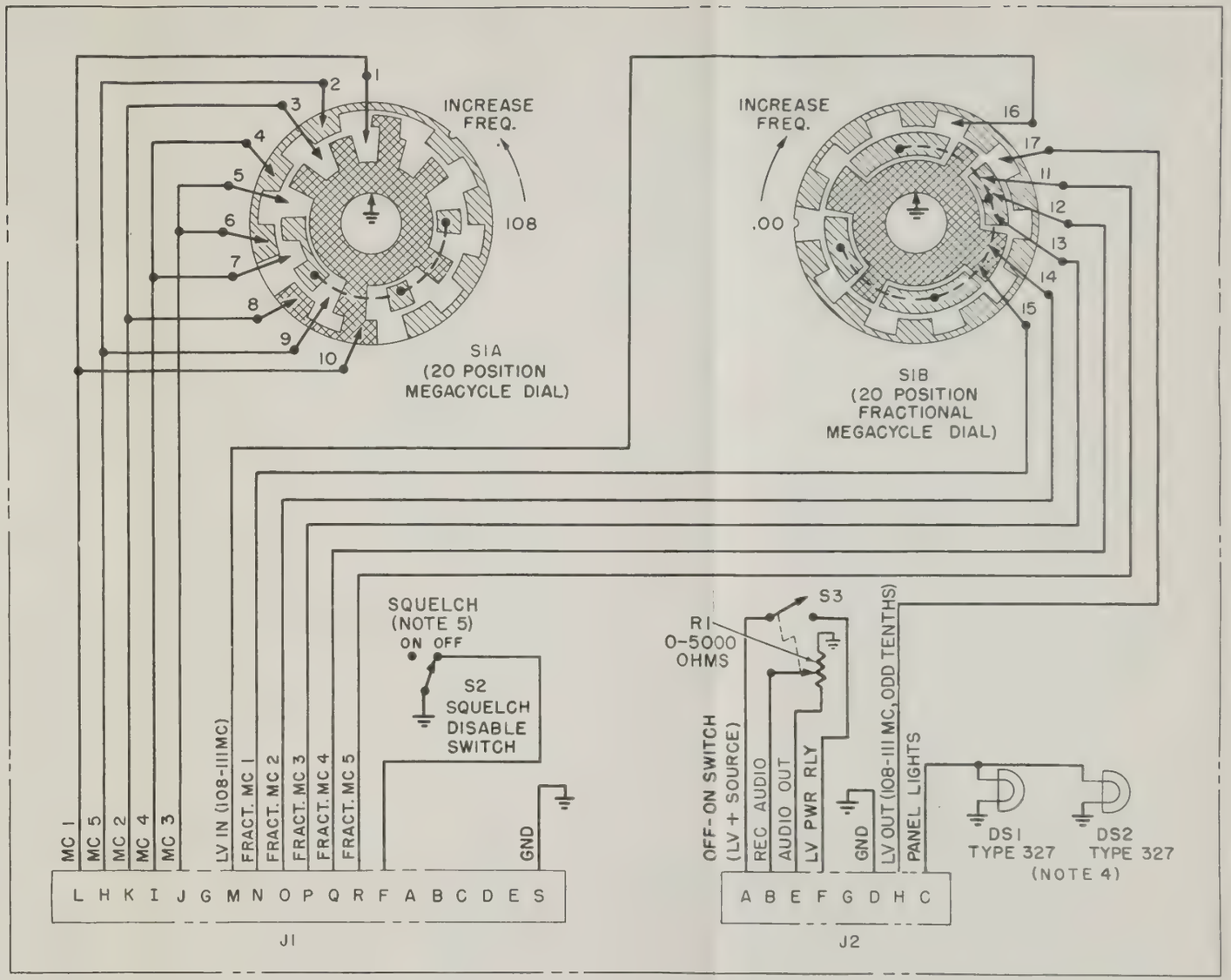
Figure 5-2. ARC Type C-81A Control Unit, Schematic Diagram

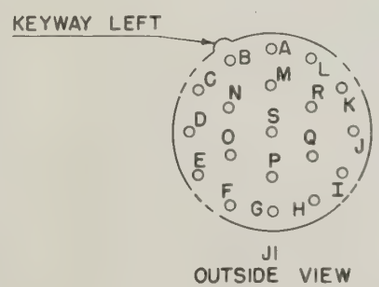
NOTES:

1. SWITCH SECTIONS S1A AND S1B ARE SHOWN IN 108.00-MC POSITION.
2. S1A CONTROLS TERMINAL GROUP H, I, J, K, L OF J1. S1B CONTROLS TERMINAL GROUP M, N, O, P, Q, R OF J1 AND H OF J2. AT EACH POSITION OF S1A AND S1B CERTAIN TERMINALS IN EACH GROUP ARE GROUNDED AND OTHER TERMINALS OF THE GROUP ARE CONNECTED TOGETHER, FREE FROM GROUND. SEE TABLE.
3. SHADED AREAS ON SWITCH SECTIONS S1A AND S1B INDICATE PLATED SURFACE. DOUBLE CROSS-HATCHED AREAS ARE GROUNDED.
4. FOR 28-VOLT OPERATION USE LAMP TYPE NO. 327 (ARC-8622); FOR 14-VOLT OPERATION USE LAMP TYPE NO. 330 (ARC-8679).
5. ON UNITS BEGINNING WITH SERIAL NO. 118, A 100K-OHM LINEAR TAPER VARIABLE RESISTOR, R2, IS USED IN PLACE OF SWITCH S2.

TABULATION OF GROUNDED TERMINALS IN EACH GROUP (NOTE 2)

S1A	Group H, I, J, K, L	S1B	Group N, O, P, Q, R	Group M(J1) H(J2) Connected Off Ground
108	L, K	.00	N, O	
109	L, K, J	.10	N, R	M, H
110	L, H	.20	Q	
111	L, K, J, I	.30	P	M, H
112	I	.40	O	
113	K, J, I, H	.50	N	M, H
114	J	.60	R	
115	L, J, I, H	.70	Q, R	M, H
116	K	.80	P, Q	
117	K, I, H	.90	O, P	M, H
118	L	.00	N, O	
119	L, J, H	.10	N, R	M, H
120	H	.20	Q	
121	K, I	.30	P	M, H
122	I, H	.40	O	
123	J, H	.50	N	M, H
124	J, I	.60	R	
125	L, I	.70	Q, R	M, H
126	K, J	.80	P, Q	
Space	L, K, H	.90	O, P	M, H





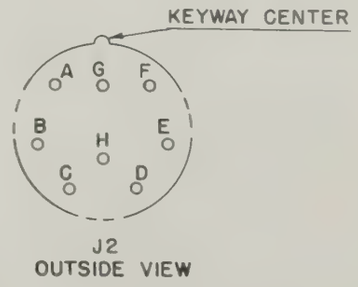
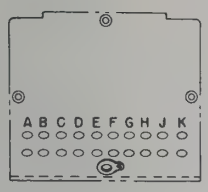
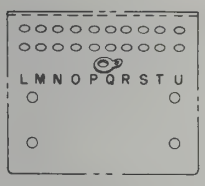
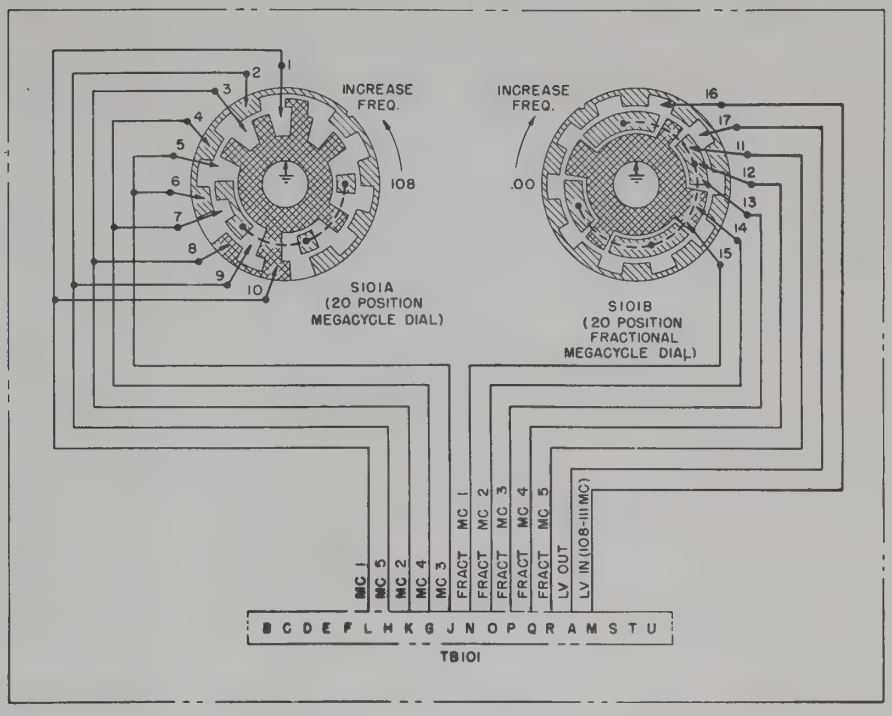


Figure 5-2. ARC Type C-81A Control Unit, Schematic Diagram





TB101
OUTSIDE
VIEWS



NOTES:

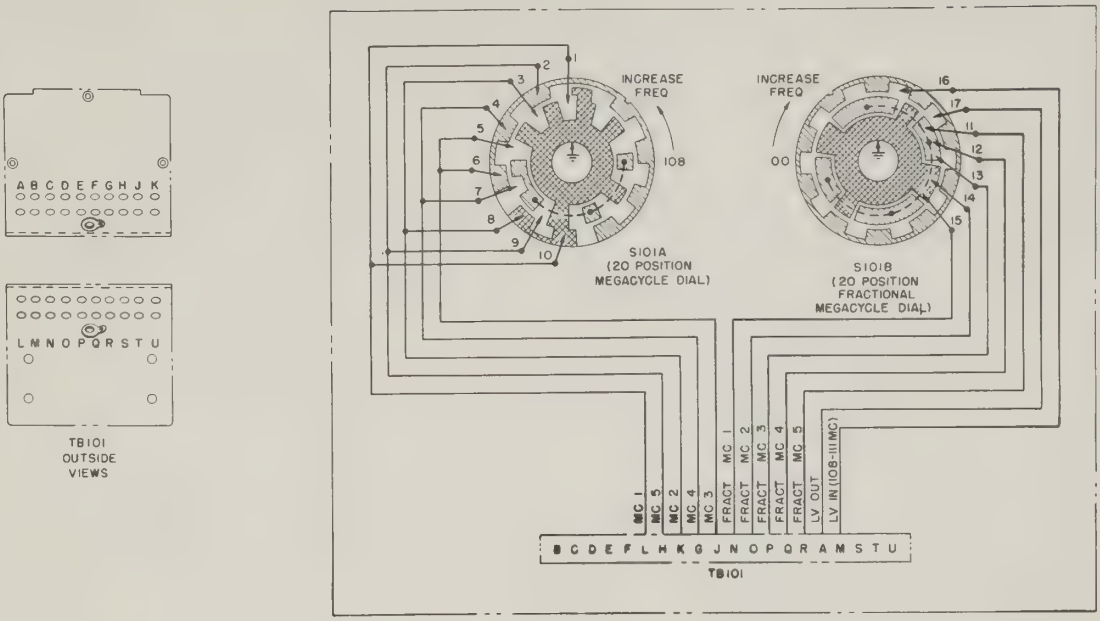
1. SWITCH SECTIONS S101A AND S101B ARE SHOWN IN 108.00-MC POSITION.
2. S101A CONTROLS TERMINAL GROUP G, H, J, K, L AND S101B CONTROLS TERMINAL GROUP A, M, N, O, P, Q, R. AT EACH POSITION OF S101A AND S101B CERTAIN TERMINALS IN EACH GROUP ARE GROUNDED AND OTHER TERMINALS OF THE GROUP ARE CONNECTED TOGETHER. SEE TABLE.

TABULATION OF GROUNDED TERMINALS IN EACH GROUP (NOTE 2)

S101A	Group G, H, J, K, L	S101B	Group N, O, P, Q, R	Group A, M Connected Off Ground
108	L, K	.00	N, O	
109	L, K, J	.10	N, R	A, M
110	L, H	.20	Q	
111	L, K, J, G	.30	P	A, M
112	G	.40	O	
113	K, J, H, G	.50	N	A, M
114	J	.60	R	
115	L, J, H, G	.70	Q, R	A, M
116	K	.80	P, Q	
117	K, H, G	.90	O, P	A, M
118	L	.00	N, O	
119	L, J, H	.10	N, R	A, M
120	H	.20	Q	
121	K, G	.30	P	A, M
122	H, G	.40	O	
123	J, H	.50	N	A, M
124	J, G	.60	R	
125	L, G	.70	Q, R	A, M
126	K, J	.80	P, Q	
Space	L, K, H	.90	O, P	A, M

22752A

Figure 5-3. Channel Selector Switch ARC-22750, Schematic Diagram



NOTES:

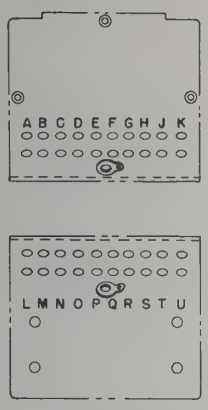
1. SWITCH SECTIONS S101A AND S101B ARE SHOWN IN 108.00-MC POSITION.
2. S101A CONTROLS TERMINAL GROUP G, H, J, K, L AND S101B CONTROLS TERMINAL GROUP A, M, N, O, P, Q, R. AT EACH POSITION OF S101A AND S101B CERTAIN TERMINALS IN EACH GROUP ARE GROUNDED AND OTHER TERMINALS OF THE GROUP ARE CONNECTED TOGETHER. SEE TABLE.

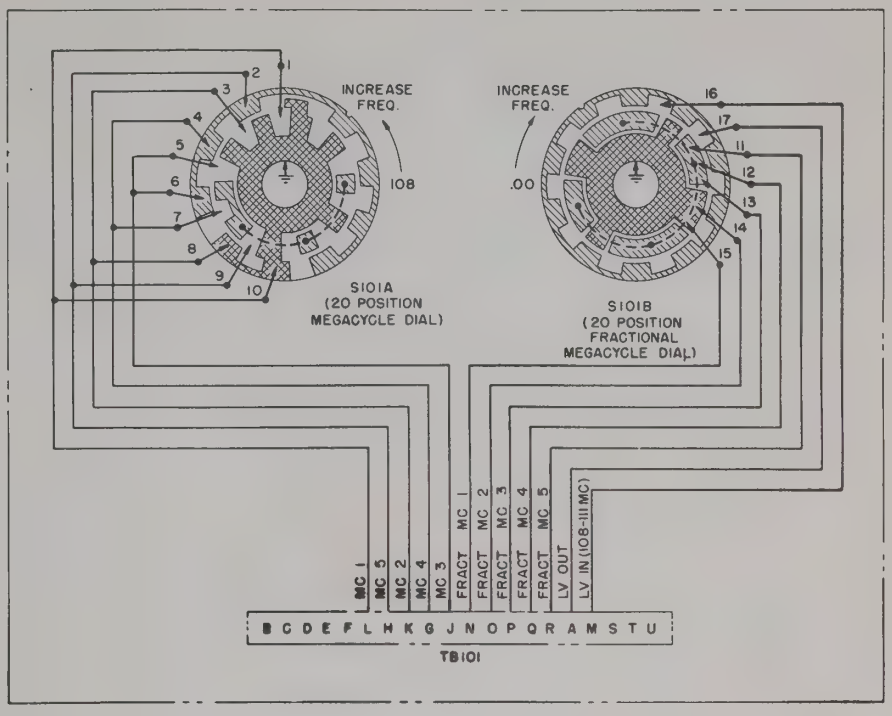
TABULATION OF GROUNDED TERMINALS IN EACH GROUP (NOTE 2)

S101A	Group G, H, J, K, L	S101B	Group N, O, P, Q, R	Group A, M Connected Off Ground
108	L, K	.00	N, O	
109	L, K, J	.10	N, R	A, M
110	L, H	.20	Q	
111	L, K, J, G	.30	P	A, M
112	G	.40	O	
113	K, J, H, G	.50	N	A, M
114	J	.60	R	
115	L, J, H, G	.70	Q, R	A, M
116	K	.80	P, Q	
117	K, H, G	.90	O, P	A, M
118	L	.00	N, O	
119	L, J, H	.10	N, R	A, M
120	H	.20	Q	
121	K, G	.30	P	A, M
122	H, G	.40	O	
123	J, H	.50	N	A, M
124	J, G	.60	R	
125	L, G	.70	Q, R	A, M
126	K, J	.80	P, Q	
Space	L, K, H	.90	O, P	A, M

22752A

Figure 5-3. Channel Selector Switch ARC-22750, Schematic Diagram





NOTES:

1. SWITCH SECTIONS S101A AND S101B ARE SHOWN IN 108.00-MC POSITION.
2. S101A CONTROLS TERMINAL GROUP G, H, J, K, L AND S101B CONTROLS TERMINAL GROUP A, M, N, O, P, Q, R. AT EACH POSITION OF S101A AND S101B CERTAIN TERMINALS IN EACH GROUP ARE GROUNDED AND OTHER TERMINALS OF THE GROUP ARE CONNECTED TOGETHER. SEE TABLE.

TABULATION OF GROUNDED TERMINALS IN EACH GROUP (NOTE 2)

S101A	Group G, H, J, K, L	S101B	Group N, O, P, Q, R	Group A, M Connected Off Ground
108	L, K	.00	N, O	
109	L, K, J	.10	N, R	A, M
110	L, H	.20	Q	
111	L, K, J, G	.30	P	A, M
112	G	.40	O	
113	K, J, H, G	.50	N	A, M
114	J	.60	R	
115	L, J, H, G	.70	Q, R	A, M
116	K	.80	P, Q	
117	K, H, G	.90	O, P	A, M
118	L	.00	N, O	
119	L, J, H	.10	N, R	A, M
120	H	.20	Q	
121	K, G	.30	P	A, M
122	H, G	.40	O	
123	J, H	.50	N	A, M
124	J, G	.60	R	
125	L, G	.70	Q, R	A, M
126	K, J	.80	P, Q	
Space	L, K, H	.90	O, P	A, M

22752A

Figure 5-3. Channel Selector Switch ARC-22750, Schematic Diagram

SECTION VI

PARTS LIST

Reference Designation[1]	Description	ARC Part No.	Manufacturer & Part No.
	A1, R-F/I-F ASSEMBLY, ARC-22275		
C1	CAPACITOR, Variable, air, 2 sect, 12 μμf ea sect	19929	
C2	CAPACITOR, Fixed, ceramic, 15 μμf ±5 per cent	8363	CN TU20-150J
C3	CAPACITOR, Fixed, ceramic, 10 μμf ±0.25 μμf, 500 vdcw, MIL type CC20HG100C	8765(10)	
C4	CAPACITOR, Variable, same as C1		
C5	CAPACITOR, Variable, air, 2 sect, 10 μμf ea sect	19897	
C6	CAPACITOR, Fixed, ceramic, 100 μμf ±2 per cent	8541	CN TU30-101G-U2J
C7	CAPACITOR, Fixed, comp, 0.82 μμf ±5 per cent, 500 vdcw	8879(0.39)	STL GA(0.39)
C8	CAPACITOR, Fixed, same as C2		
C9	CAPACITOR, Fixed, mica, 510 μμf ±5 per cent, 500 vdcw	8908(510)	EMM VTDM-19-510
C10	CAPACITOR, Fixed, ceramic, 1000 μμf ±20 per cent, 500 vdcw	8832	SLM CF-100-2-1022
C11	CAPACITOR, Fixed, ceramic, 1000 μμf ±20 per cent, 500 vdcw	14143	ERC 357
C12	CAPACITOR, Fixed, same as C11		
C13	CAPACITOR, Fixed, same as C11		
C14	CAPACITOR, Fixed, ceramic, 3 μμf ±0.25 per cent	8278	
C15	CAPACITOR, Variable, air, 0.8 to 8.5 μμf	19946	JFDM VC9G
C16	CAPACITOR, Fixed, mica, 71 μμf ±5 per cent, 500 vdcw	8870(71)	EMM VTDM-15-71
C17	CAPACITOR, Fixed, plastic, 0.01 μf ±20 per cent, 300 vdcw	8837	CLD TWA3S1GS-10
C18	CAPACITOR, Fixed, comp, 0.82 μμf ±5 per cent, 500 vdcw	8879(0.82)	STL GA(0.82)
C19	CAPACITOR, Fixed, mica, 91 μμf ±1 per cent, 500 vdcw	8848	EMM VTDM-15-91
C20	CAPACITOR, Fixed, same as C14		
C21	CAPACITOR, Variable, same as C15		
C22	CAPACITOR, Fixed, ceramic, 2700 μμf ±2 per cent, 500 vdcw	8554	CN BU25272NZ5Z
C23	CAPACITOR, Fixed, plastic, 0.01 μf ±20 per cent, 300 vdcw	8835	CLD TWA3S1W-10
C24	CAPACITOR, Fixed, same as C23		
C25	CAPACITOR, Fixed, same as C23		
C26	CAPACITOR, Fixed, same as C17		
C27	CAPACITOR, Fixed, same as C17		
C28	CAPACITOR, Variable, same as C1		
C29	CAPACITOR, Variable, air, 0 to 10 μμf	19603	
C30	CAPACITOR, Fixed, mica, 51 μμf ±5 per cent, 500 vdcw	8870(51)	EMM VTDM-15-51
C31	CAPACITOR, Fixed, same as C10		
C32	CAPACITOR, Fixed, same as C30		
C33	CAPACITOR, Fixed, ceramic, 250 μμf ±20 per cent, 500 vdcw	8535	CN BU20251MV5V
C34	CAPACITOR, Fixed, same as C10		
C35	CAPACITOR, Fixed, mica, 100 μμf ±5 per cent, 500 vdcw	8870(100)	EMM VTDM-15-100
C36	CAPACITOR, Fixed, ceramic, 7 μμf ±0.25 μμf, 500 vdcw	8765(7)	
C37	CAPACITOR, Fixed, same as C30		
C38	CAPACITOR, Fixed, mica, 240 μμf ±5 per cent, 500 vdcw	8870(240)	EMM VTDM-15-240
C39	CAPACITOR, Fixed, same as C10		
C40	CAPACITOR, Fixed, same as C11		
C41	CAPACITOR, Fixed, same as C14		
C42	CAPACITOR, Fixed, same as C11		
C43	CAPACITOR, Fixed, same as C10		
C44	CAPACITOR, Fixed, same as C11		
C45	CAPACITOR, Fixed, same as C14		

[1]Reference designations are abbreviated; for complete identification, prefix with applicable assembly designation.

Reference Designation[1]	Description	ARC Part No.	Manufacturer & Part No.
J1	CONNECTOR, Receptacle, electrical	15185	IPC 18450
J2	CONNECTOR, Receptacle, electrical	12357	
J3	CONNECTOR, Receptacle, electrical	11905	
L1	COIL, RF	22112	
L2	CHOKE, RF, 0.22 μh ±20 per cent	8879(.22)	JFE 10100-622
L3	COIL, RF	22113	
L4	COIL, RF	22114	
L5	COIL, IF	19715	
L6	COIL, IF, same as L5		
L7	COIL, RF	22116	
L8	CHOKE, RF, 3.3 μh ±10 per cent	8877(3.3)	JFE 10102-620
L9	CHOKE, RF, .68 μh ±20 per cent	8877(0.68)	JFE 10100-628
L10	COIL, RF	22115	
L11	CHOKE, RF, 15 μh ±10 per cent	8877(15)	JFE 10102-636
P1	CONNECTOR, Plug, electrical	22813	
P2	CONNECTOR, Plug, electrical	19339	
P3	CONNECTOR, Plug, electrical	22815	
P4	CONNECTOR, Same as P2		
P5	CONNECTOR, Plug, electrical	20472	MICRODOT 3223
P6	CONNECTOR, Plug, wired	11934	
R1	RESISTOR, Fixed, comp, 100,000 ohms ±10 per cent, 1/4w	200(100K)	AB CB1041
R2	RESISTOR, Fixed, comp, 100 ohms ±10 per cent, 1/4w	200(100)	AB CB1011
R3	RESISTOR, Fixed, comp, 33 ohms ±10 per cent, 1/4w	204(33)	GBR 997CX33
R4	RESISTOR, Fixed, comp, 470,000 ohms ±10 per cent, 1/4w	200(470K)	AB CB4741
R5	RESISTOR, Fixed, same as R4		
R6	RESISTOR, Fixed, same as R1		
R7	RESISTOR, Fixed, comp, 680 ohms ±10 per cent, 1/4w	200(680)	AB CB6811
R8	RESISTOR, Fixed, comp, 220,000 ohms ±10 per cent, 1/4w	200(220K)	AB CB2241
R9	RESISTOR, Fixed, comp, 82,000 ohms ±10 per cent, 1/4w	200(82K)	AB CB8231
R10	RESISTOR, Fixed, comp, 2200 ohms ±10 per cent, 1/4w	200(2200)	AB CB2221
R11	RESISTOR, Fixed, same as R9		
R12	RESISTOR, Fixed, same as R7		
R13	RESISTOR, Fixed, same as R8		
R14	RESISTOR, Fixed, same as R10		
R15	RESISTOR, Fixed, same as R1		
R16	RESISTOR, Fixed, comp, 330 ohms ±10 per cent, 1/4w	200(330)	AB CB3311
R17	RESISTOR, Variable, comp, 0 to 5000 ohms ±20 per cent, 0.33w	8915(5K)	AB GLU5022/SD3028L
R18	RESISTOR, Fixed, same as R1		
R19	RESISTOR, Fixed, comp, 33,000 ohms ±10 per cent, 1/4w	200(33K)	AB CB3331
R20	RESISTOR, Variable, comp, 0 to 100,000 ohms ±20 per cent, 0.33w	8915(100K)	AB GLU1042/SD3028L
R21	RESISTOR, Fixed, comp, 10 ohms ±10 per cent, 1/4w	204(10)	GBR 997CX10
R22	RESISTOR, Fixed, comp, 3300 ohms ±10 per cent, 1/4w	200(3.3)	AB CB3321
R23	RESISTOR, Fixed, comp, 1500 ohms ±10 per cent, 1/4w	200(1500)	AB CB1521
R24	RESISTOR, Fixed, same as R19		
R25	RESISTOR, Fixed, comp, 220 ohms ±10 per cent, 1/4w	200(220)	AB CB2211
R26	RESISTOR, Fixed, same as R25		

[1]Reference designations are abbreviated; for complete identification, prefix with applicable assembly designation.

Reference Designation[1]	Description	ARC Part No.	Manufacturer & Part No.
R27	RESISTOR, Fixed, same as R1		
R28	RESISTOR, Fixed, comp, 47,000 ohms ±5 per cent, 1/2w	201(47K)	AB EB4735
R29	RESISTOR, Fixed, same as R7		
R30	RESISTOR, Fixed, comp, 68,000 ohms ±10 per cent, 1/4w	200(68K)	AB CB6831
S1	SWITCH, Sensitive, SPDT	8685	MCS 11SM1-T2
S2	SWITCH, Same as S1		
T1	TRANSFORMER, IF	22124	
V1	ELECTRON TUBE, Type 5718	700-122	
V2	ELECTRON TUBE, Same as V1		
V3	ELECTRON TUBE, Type 5899	700-132	
V4	ELECTRON TUBE, Same as V3		
V5	ELECTRON TUBE, Same as V1		
V6	ELECTRON TUBE, Type 6021	700-136	
V7	ELECTRON TUBE, Same as V1		
Y1	CRYSTAL, Quartz, 48.15 mc	19658(48.15)	
Y2	CRYSTAL, Quartz, 49.15 mc	19658(49.15)	
Y3	CRYSTAL, Quartz, 50.15 mc	19658(50.15)	
Y4	CRYSTAL, Quartz, 51.15 mc	19658(51.15)	
Y5	CRYSTAL, Quartz, 52.15 mc	19658(52.15)	
Y6	CRYSTAL, Quartz, 53.15 mc	19658(53.15)	
Y7	CRYSTAL, Quartz, 54.15 mc	19658(54.15)	
Y8	CRYSTAL, Quartz, 55.15 mc	19658(55.15)	
Y9	CRYSTAL, Quartz, 56.15 mc	19658(56.15)	
Y10	CRYSTAL, Quartz, 57.15 mc	19658(57.15)	
Y11	CRYSTAL, Quartz, 56.65 mc	19658(56.65)	
Y12	CRYSTAL, Quartz, 55.65 mc	19658(55.65)	
Y13	CRYSTAL, Quartz, 54.65 mc	19658(54.65)	
Y14	CRYSTAL, Quartz, 53.65 mc	19658(53.65)	
Y15	CRYSTAL, Quartz, 52.65 mc	19658(52.65)	
Y16	CRYSTAL, Quartz, 51.65 mc	19658(51.65)	
Y17	CRYSTAL, Quartz, 50.65 mc	19658(50.65)	
Y18	CRYSTAL, Quartz, 49.65 mc	19658(49.65)	
Y19	CRYSTAL, Quartz, 48.65 mc	19658(48.65)	
Y21	CRYSTAL, Quartz, 10.00 mc	19657(10.00)	
Y22	CRYSTAL, Quartz, 10.10 mc	19657(10.10)	
Y23	CRYSTAL, Quartz, 10.20 mc	19657(10.20)	
Y24	CRYSTAL, Quartz, 10.30 mc	19657(10.30)	
Y25	CRYSTAL, Quartz, 10.40 mc	19657(10.40)	
Y26	CRYSTAL, Quartz, 10.50 mc	19657(10.50)	
Y27	CRYSTAL, Quartz, 10.60 mc	19657(10.60)	
Y28	CRYSTAL, Quartz, 10.70 mc	19657(10.70)	
Y29	CRYSTAL, Quartz, 10.80 mc	19657(10.80)	
Y30	CRYSTAL, Quartz, 10.90 mc	19657(10.90)	
	A2, I-F/A-F ASSEMBLY, ARC-22297		
C1	CAPACITOR, Fixed, plastic, 0.01 μf ±20 per cent, 300 vdcw	8837	CLD TWA3S1GS-10
C2	CAPACITOR, Fixed, mica, 100 μμf ±2 per cent, 500 vdcw	8706(100)	EMM VTCM-15-100
C3	CAPACITOR, Fixed, same as C1		
C4	CAPACITOR, Fixed, same as C1		
C5	CAPACITOR, Fixed, same as C1		
C6	CAPACITOR, Fixed, same as C1		
C7	CAPACITOR, Fixed, same as C1		
C8	CAPACITOR, Fixed, same as C1		
C9	CAPACITOR, Fixed, electrolytic, 2.2 μf ±20 per cent, 35 vdcw	21485(2.2)	SPR 150D270B1
C10	CAPACITOR, Fixed, same as C1		

[1]Reference designations are abbreviated; for complete identification, prefix with applicable assembly designation.

Reference Designation[1]	Description	ARC Part No.	Manufacturer & Part No.
C11	CAPACITOR, Fixed, same as C1		
C12	CAPACITOR, Fixed, same as C1		
C13	CAPACITOR, Fixed, same as C1		
C14	CAPACITOR, Fixed, same as C1		
C15	CAPACITOR, Fixed, same as C9		
C16	CAPACITOR, Fixed, mica, 240 μμf ±5 per cent, 500 vdcw	8908(240)	EMM VTDM-19-240
C17	CAPACITOR, Fixed, mica, 100 μμf ±5 per cent, 500 vdcw	8870(100)	EMM VTDM-15-100
C18	CAPACITOR, Fixed, same as C17		
C19	CAPACITOR, Fixed, electrolytic, 0.1 μf ±20 per cent, 35 vdcw	21485(0.1)	SPR 150D258B1
C20	CAPACITOR, Fixed, same as C17		
C21	CAPACITOR, Fixed, same as C1		
C22	CAPACITOR, Fixed, mica, 510 μμf ±5 per cent, 500 vdcw	8908(510)	EMM VTDM-19-510
C23	CAPACITOR, Fixed, same as C19		
C24	CAPACITOR, Fixed, same as C1		
C25	CAPACITOR, Fixed, mica, 1000 μμf ±5 per cent, 500 vdcw	8908(1000)	EMM VTDM-19-1000
C26	CAPACITOR, Fixed, paper, 0.1 μf ±20 per cent, 100 vdcw	8889(0.1)	SPR 196P10401S4
C27	CAPACITOR, Fixed, same as C19		
C28	CAPACITOR, Fixed, same as C1		
C29	CAPACITOR, Fixed, electrolytic, 5 μf -15 +50 per cent, 50 vdcw	8881(5)	FML PP5B50A2
C30	CAPACITOR, Fixed, plastic, 0.01 μf ±20 per cent, 300 vdcw	8835	CLD TWA3S1-10
C31	CAPACITOR, Fixed, paper, 0.022 μf ±20 per cent, 200 vdcw	8890(0.022)	SPR 196P22302S4
C32	CAPACITOR, Fixed, same as C29		
C33	CAPACITOR, Fixed, electrolytic, 5 μf, 300 vdcw	6350	
C34	CAPACITOR, Fixed, electrolytic, 12 μf ±20 per cent, 150 vdcw	8777	SPR 110D
C35	CAPACITOR ASSEMBLY, 3 sect, ea sect 0.22 μf ±20 per cent, 400 vdcw	5413	
C36	CAPACITOR, Fixed, same as C33		
C37	CAPACITOR, Fixed, same as C34		
CR1	SEMICONDUCTOR DEVICE, Diode	23037	HUG HD6226
CR2	SEMICONDUCTOR DEVICE, Diode, same as CR1		
CR3	SEMICONDUCTOR DEVICE, Diode, same as CR1		
CR4	SEMICONDUCTOR DEVICE, Diode, type 1N1371	22298(68)	
CR5	SEMICONDUCTOR DEVICE, Diode, same as CR1		
CR6	SEMICONDUCTOR DEVICE, Diode, type 1N1375	22298(100)	
J1	CONNECTOR, Receptacle, electrical	21809	
J2	JACK, Tip	19323	MICRODOT 3101
J3	CONNECTOR, Receptacle, electrical	4718	
J4	CONNECTOR, Receptacle, electrical	5488	
L1	CHOKE COIL ASSEMBLY	5634	
L2	CHOKE COIL ASSEMBLY	5546	
R1	RESISTOR, Fixed, comp, 47,000 ohms ±10 per cent, 1/4w	200(47K)	AB CB4731
R2	RESISTOR, Fixed, comp, 100,000 ohms ±10 per cent, 1/4w	200(100K)	AB CB1041
R3	RESISTOR, Fixed, comp, 180 ohms ±10 per cent, 1/4w	200(180)	AB CB1811
R4	RESISTOR, Fixed, comp, 4700 ohms ±10 per cent, 1/4w	200(4700)	AB CB4721
R5	RESISTOR, Fixed, comp, 2200 ohms ±10 per cent, 1/4w	200(2200)	AB CB2221

[1] Reference designations are abbreviated; for complete identification, prefix with applicable assembly designation.

Reference Designation[1]	Description	ARC Part No.	Manufacturer & Part No.
R6	RESISTOR, Fixed, same as R3		
R7	RESISTOR, Fixed, same as R4		
R8	RESISTOR, Fixed, same as R5		
R9	RESISTOR, Fixed, same as R2		
R10	RESISTOR, Fixed, comp, 150 ohms ±10 per cent, 1/4w	200(150)	AB CB1511
R11	RESISTOR, Fixed, comp, 39,000 ohms ±5 per cent, 1/2w	201(39K)	AB EB3935
R12	RESISTOR, Fixed, comp, 220 ohms ±10 per cent, 1/4w	200(220)	AB CB2211
R13	RESISTOR, Fixed, comp, 220,000 ohms ±10 per cent, 1/4w	200(220K)	AB CB2241
R14	RESISTOR, Fixed, comp, 15,000 ohms ±10 per cent, 1/4w	200(15K)	AB CB1531
R15	RESISTOR, Fixed, comp, 330,000 ohms ±10 per cent, 1/4w	200(330K)	AB CB3341
R16	RESISTOR, Fixed, same as R2		
R17	RESISTOR, Fixed, comp, 33,000 ohms ±10 per cent, 1/4w	200(33K)	AB CB3331
R18	RESISTOR, Fixed, comp, 330 ohms ±10 per cent, 1/4w	200(330)	AB CB3311
R19	RESISTOR, Fixed, comp, 22,000 ohms ±10 per cent, 1/4w	200(22K)	AB CB2231
R20	RESISTOR, Fixed, comp, 10,000 ohms ±10 per cent, 1/4w	200(10K)	AB CB1031
R21	RESISTOR, Fixed, same as R20		
R22	RESISTOR, Fixed, same as R2		
R23	RESISTOR, Fixed, same as R13		
R24	RESISTOR, Fixed, comp, 150,000 ohms ±10 per cent, 1/4w	200(150K)	AB CB1541
R25	RESISTOR, Fixed, comp, 470,000 ohms ±10 per cent, 1/4w	200(470K)	AB CB4741
R26	RESISTOR, Fixed, comp, 68,000 ohms ±10 per cent, 1/4w	200(68K)	AB CB6831
R27	RESISTOR, Fixed, comp, 1,000,000 ohms ±10 per cent, 1/4w	200(1MEG)	AB CB1051
R28	RESISTOR, Fixed, same as R13		
R29	RESISTOR, Fixed, same as R15		
R30	RESISTOR, Fixed, same as R26		
R31	RESISTOR, Fixed, same as R27		
R32	RESISTOR, Fixed, same as R27		
R33	RESISTOR, Fixed, same as R26		
R34	RESISTOR, Fixed, comp, 6800 ohms ±10 per cent, 1/4w	200(6800)	AB CB6821
R35	RESISTOR, Fixed, same as R34		
R36	RESISTOR, Fixed, same as R2		
R37	RESISTOR, Fixed, comp, 56,000 ohms ±5 per cent, 1w	202(56K)	AB GB5635
R38	RESISTOR, Fixed, same as R15		
R39	RESISTOR, Fixed, same as R25		
R40	RESISTOR, Fixed, comp, 470 ohms ±5 per cent, 1w	202(470)	AB GB4715
R41	RESISTOR, Fixed, WW, 5000 ohms ±5 per cent, 10w	3065	
R42	RESISTOR, Fixed, WW, 3 ohms, ±3 per cent, 3w (used in 28V model)	209(3)	
R43	RESISTOR, Fixed, comp, 3300 ohms ±10 per cent, 1/4w	200(3300)	AB CB3321
R44	RESISTOR, Fixed, comp	[2]201(*)	AB
R45	RESISTOR, Fixed, comp	[2]201(*)	AB
T1	TRANSFORMER, IF	22124	
T2	TRANSFORMER, IF, same as T1		
T3	TRANSFORMER, IF	22126	
T4	TRANSFORMER, Output	20679	CMPB L1883

[1]Reference designations are abbreviated; for complete identification, prefix with applicable assembly designation.
[2]Value selected between 50K and 470K at time of final adjustment.

Reference Designation[1]	Description	ARC Part No.	Manufacturer & Part No.
V1	ELECTRON TUBE, Type 5899	700-132	
V2	ELECTRON TUBE, Same as V1		
V3	ELECTRON TUBE, Type 5840	700-129	
V4	ELECTRON TUBE, Type 5896	700-131	
V5	ELECTRON TUBE, Type 6021	700-136	
V6	ELECTRON TUBE, Type 6112	700-139	
V7	ELECTRON TUBE, Type 5902	700-133	
	A3, TUNER ASSEMBLY, ARC-22203		
B1	MOTOR, DC, 14V	18800	CLP DC-8-C-51
B1	MOTOR, DC, 28V	18801	CLP DC-8-C-11
CR1	SEMICONDUCTOR DEVICE, Diode	23037	HUG HD6226
CR2	SEMICONDUCTOR DEVICE, Diode, same as CR1		
[2]J1	JACK, Tip, p/o ARC-22812		
J2	PLATE, Contact	22105	
[2]J3	JACK, Tip, same as J1		
J4	PLATE, Contact, same as J2		
K1	RELAY, 14V	19664	
K1	RELAY, 28V	19665	
K2	RELAY, 14V, same as K1		
K2	RELAY, 28V, same as K1		
MP1	PLATE ASSEMBLY	19443	
MP2	PLATE ASSEMBLY, Same as MP1		
P1	CONTACT, Electrical, p/o B1	19546	
P2	CONNECTOR, Receptacle, electrical	19339	
P3	CONNECTOR, Plate	22815	
P4	CONNECTOR, Receptacle, same as P2		

[1]Reference designations are abbreviated; for complete identification, prefix with applicable assembly designation.
[2]Nonprocurable part

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